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THE HELLHOUND PROJECT
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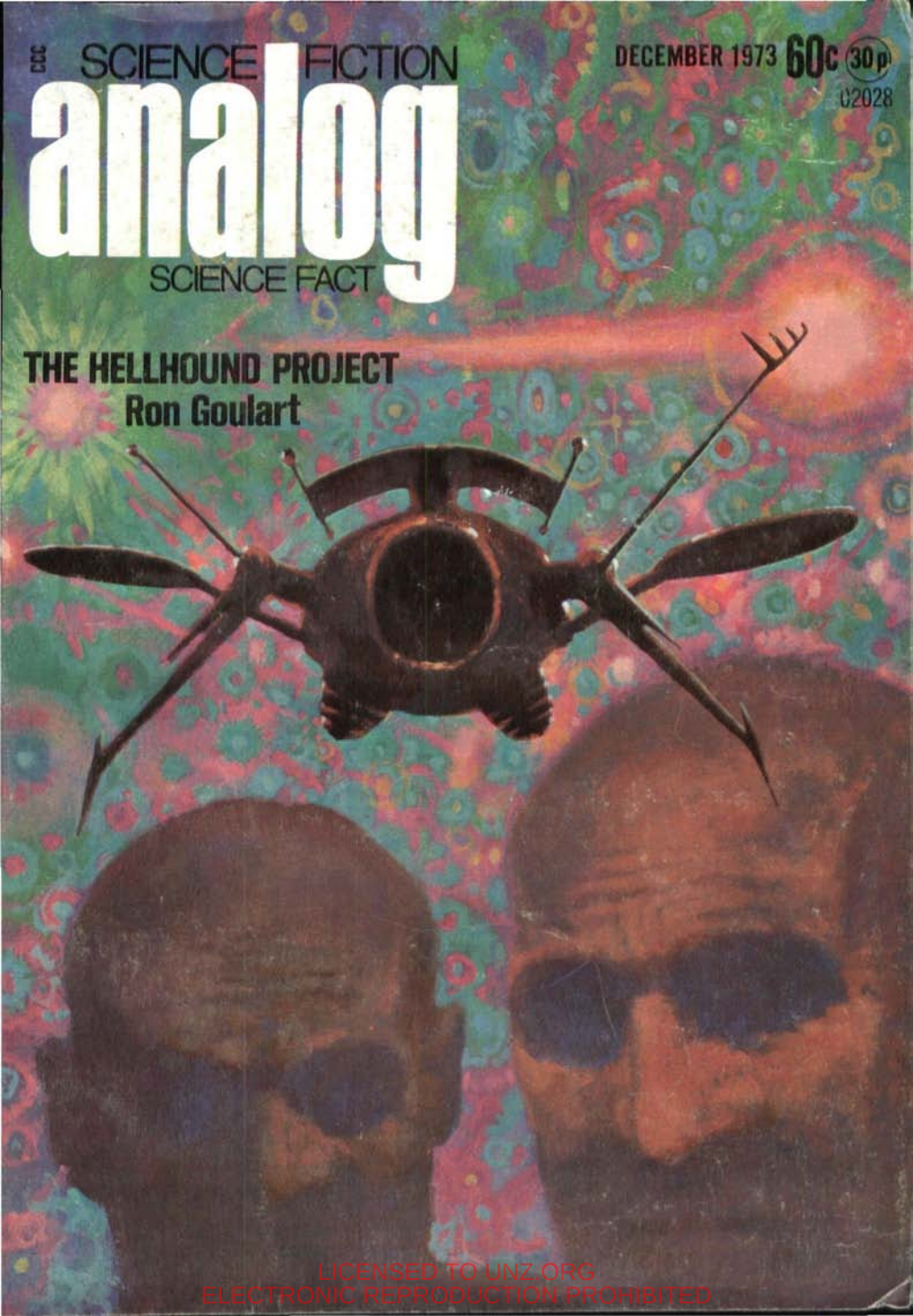

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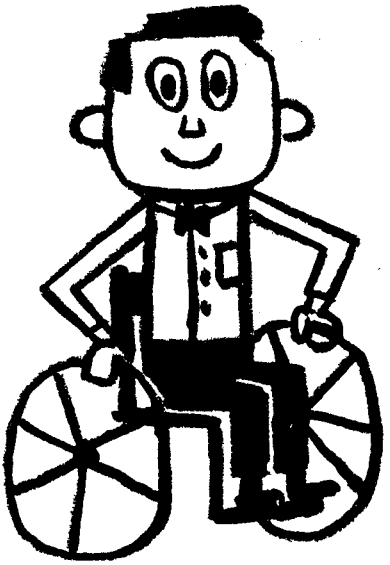

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Those Improbable Quasars

Two years ago, in what sadly was his last editorial for Analog, John Campbell summarized the problems presented by those maddening quasars—problems that have driven astronomers and cosmologists to frustrated gibbering.

He titled the editorial "Those Impossible Quasars." Today we might be on the verge of moving the quasars from the category of "impossible" to a tamer "improbable." And it's rather fitting, too, that some significant breakthroughs have been made in this tenth anniversary of the year in which the quasars were first recognized to be something extraordinary in the heavens.

Don't begin celebrating yet. The quasars may still be doing things that are well beyond our understanding of physics. But it begins to look as if their uniqueness, their strangeness, is as much a matter of human interpretation as of actual, physical fact.

The quasars have not yet been tamed to the point where they can be fit snugly into one of the grand cosmological schemes that university professors are so fond of. They are still, in the words of Sir Winston Churchill, "a riddle wrapped in a mystery inside an enigma." But it's at least beginning to look as if they're not *completely* different from everything else in the universe, and not *completely* beyond our powers of understanding. As long as we're quoting famous men, it was Albert Einstein who said, "The eternal mystery of the world is its comprehensibility."

The quasars were first noticed as early as 1960, when astronomers found that there were several strong radio sources that seemed to coincide with the locations of rather inconspicuous blue stars. They were assumed to be stars in our own Milky Way galaxy, and astronomers rejoiced that "radio stars" had at last been discovered. Since the beginnings of radio astronomy, researchers had been trying to find stars that were both optically bright and strong radio emitters, because then the two techniques of observation could be compared against each other on the same objects. Most stars are generally quiet in radio output; our own sun, for example, does not emit much radio energy—except when a solar flare erupts.

By 1963 it was certain that the "radio stars" were not stars at all. Optical astronomers couldn't get an intelligible spectrum from any of

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them. Then Maarten Schmidt of the Mt. Palomar Observatory guessed that what was being looked at were redshifted spectra. *(Note: The physical evidence was practically useless without an astute interpretation.)*

The spectra of these puzzling objects were indeed found to be redshifted, by considerable amounts. Astronomers started calling them "quasi-stellar objects" or "quasi-stellar radio sources." In 1964 Hong-Yee Chiu, of Columbia University, coined the term "quasar," for which English language purists have never quite forgiven him.

The quasars posed such formidable problems for astronomers and cosmologists that many of them fled the scene, leaping gladly to newer (and easier) problems such as pulsars, neutron stars, X-ray sources, and black holes. Well, all right, black holes are far from easy when it comes to the physics of the problem. But the quasars did appear to be truly impossible.

If their redshifts meant that they were "cosmologically" distant—the standard Hubble-type explanation that equates redshift with distance—then the quasars were out among the farthest of galaxies. Very quickly, quasars with enormous redshifts were found, and early in 1973 two quasars with redshifts of more than ninety percent of the speed of light were discovered.

The Hubble-type explanation says that the redshifts are Doppler shifts, caused by the objects moving away from us. They are moving away because the universe is expanding. The bigger the redshift, the farther the object. The quasars that show recession velocities of more than ninety percent of light-speed must, therefore, be more than ten billion light-years away. This is not only very close to the theoretical limits of how far we can see into space, it also means that we're seeing these objects at close to the time that most cosmologists have fixed as the very beginning of the universe!

If the redshifts can be interpreted (there's that word again!) as being equated to distances.

Following that line of interpretation, if the quasars are so distant, yet such powerful emitters of energy, they must be putting out more energy—radio, infrared, visible light, ultraviolet—than a hundred galaxies of the Milky Way's size. But they're far smaller than galaxies!

Quasars flicker. Their energy emissions vary. They get stronger or weaker over periods ranging from a day or so to many months. This means that the body emitting the radiation can't be more than a light-day or, at most, several light-months, in diameter. Contrast this to a typical galaxy, which is many thousands of light-*years* wide! A light-day is about three times the diameter of Pluto's orbit. How can you explain a body that's scarcely

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three times larger than the Solar System pouring out more energy than a hundred Milky Way galaxies?

You can't. And neither can anyone else.

So when it was discovered two years ago that the two components of the quasar 3C 273 are flying away from each other at ten times the speed of light, it was a case of adding another straw to an already broken back.

The speed of light is an absolute limit, any physicist will tell you. Nothing in this universe can move faster than light-speed, *c*. There is no way that 3C 273's two components can be moving away from each other at 10 *c*.

Again: it's not the evidence by itself that counts; it's the interpretation.

Since the earliest glimmerings of the quasar puzzle, a small but persistent group of astronomers, physicists and cosmologists have been insisting that the quasars are not "cosmologically" distant, but are instead relatively nearby, "local" objects—only a few tens of millions of light-years away, rather than billions. These thinkers believe that the quasars' redshifts are not part of the expansion of the universe and cannot be related to their distances. They claim the quasars are "local": not in our galaxy, not even in our Local Group of galaxies, but certainly not out at the edges of the observable universe.

There is much to recommend the idea that quasars are "local" objects. (I even wrote an article for the June 1968 Analog that suggested the quasars are actually interstellar spacecraft within our own galaxy. My tongue was in my cheek, of course, but not all the way.)

If the quasars are "local," then 3C 273 isn't flying apart at 10 *c*. The estimated energy outputs of the quasars come down to something more easily handled—only a fraction of a galaxy's output. Their sizes, as deduced by their twinkling, fall more in line with what we would expect. The quasars begin to look like large star clusters, perhaps a million solar masses in size, but far smaller and less energetic than a ten-billion-solar-mass galaxy.

But then, what causes the redshifts?

Fred Hoyle and William Fowler suggested a decade ago that the quasars were indeed supermassive stars (or star clusters), and the redshifts were caused by gravitational stress on the photons struggling away from their surfaces.

Other astronomers, such as Allan Sandage, have suggested that the quasars are something the size of a major star cluster that's been fired out of its parent galaxy by an explosion in the galaxy's core. In this view, the redshift is caused by ac-

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tual speed of recession, but the motion has nothing to do with cosmological expansion of the universe. When asked why we see only quasars flying *away* from us, these astronomers point out that blueshifted quasars would be extremely difficult to detect for a variety of valid reasons. Besides, some suspected quasars have shown no measurable redshifts; perhaps they *are* blueshifted, and have been hurled out of parent galaxies toward us.

Question: If this *interpretation* of the redshift evidence is correct, what about the redshifts of ordinary galaxies? Do we live in a universe that has redshifted galaxies, for one reason, and redshifted quasars, for another? Or is the universal expansion of the universe, the whole Hubble redshift-distance relationship, merely an incorrect interpretation of the evidence?

Perhaps the universe is not expanding, after all.

Most cosmologists would succumb to apoplexy, if that turned out to be true. Thankfully for their physical and emotional well-being, it appears that it's *not* true. The latest evidence shows strongly that the quasars are truly "cosmological" objects.

For one thing, as John Bahcall of the University of California (Berkeley) has shown, the larger a quasar's redshift, the dimmer it appears to be. This is what you would expect if increasing redshift means increasing distance.

Then Jerome Kristian of the Mt. Palomar Observatory has pointed out that on every photographic plate taken with the 200-inch telescope where the redshift of the quasar is small enough so that an astronomer would expect to be able to see a galaxy at that distance, a faint image of a galaxy does indeed appear—surrounding the quasar! For the most distant quasars, no galaxies are seen, because the distance is too great; not even the 200-inch "light bucket" could pick up a galaxy at such distances.

More evidence comes from much closer at hand—within our own Milky Way galaxy, in fact. Studies of the motions of individual stars, and of gas clouds at the core of our galaxy, lead to the conclusion that the Milky Way is expanding. This has brought up a new round of arguing about the old idea that galaxies evolve from spirals into elliptical types. But the main point here is that the center of our galaxy is spitting out material—in the form of gas and stars—material that probably goes into the formation of the spiral arms that coil about the galaxy's core.

This new finding, which has been confirmed by observation of other galaxies where much the same thing is happening, has also helped to explain one of the puzzles of modern astrophysics: gravity waves.

Joseph Weber of the University

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of Maryland, the pioneer observer of gravity waves from space, has been roundly criticized lately because there has been no satisfactory explanation for the amounts of gravitational energy he claims to have observed.

Weber believed that his "telescope"—a 3.5-ton cylinder of solid aluminum coated with piezoelectric motion detectors—had detected gravity waves given off by massive stars undergoing supernova explosions and collapsing into neutron stars or black holes. But the amount of gravitational radiation he claimed to detect was too much for other scientists to believe—more than one hundred times the mass of the sun would have to be converting itself into gravitational energy per year to account for Weber's data. At a conference at Oxford last April, both American and British astrophysicists scoffed at Weber's claims.

But the information about the Milky Way's expansion throws new light on the subject. Something like a hundred times the mass of the sun could be sweeping past our Solar System every year, mostly in the form of interstellar hydrogen gas. This could be what Weber is detecting.

Moreover, when this internal expansion of the Milky Way is put alongside all the other evidence that galaxies have very active, even

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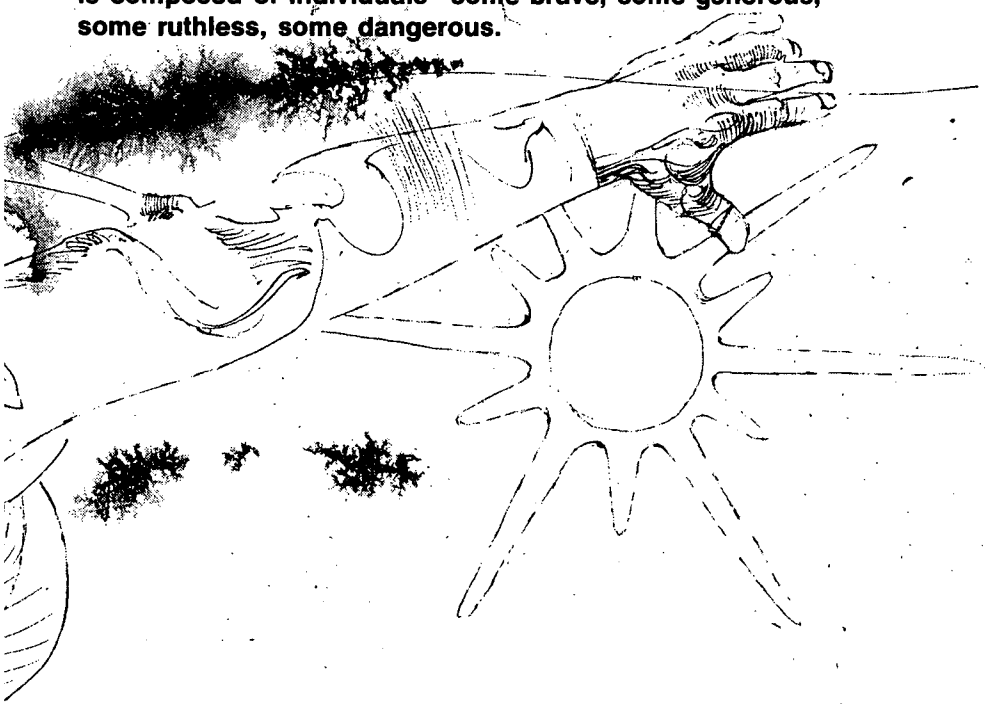
THE HELLHOUND PROJECT

The "military-industrial complex" is composed of individuals—some brave, some generous, some ruthless, some dangerous.



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I

The mechanical cop came roving through the ninth floor of the Plaza Hotel, swinging his electric nightstick. "Time's up there," he said as he jabbed at the inhabitant of one plastic cot and then another.

Dawn light was beginning to show dimly at the barred windows. Heavy rain continued to fall.

A lean scraggly man sat up, massaged his face with scabby hands. "I still got an hour, you dumb tin can." He pointed at the ticking meter beside his cot.

The robot flophouse cop rolled on, poking his stick into sleepers whose meter time had run out. "Time's up there. Rise and shine." He stopped beside another flopcot. "Off your ox, buddy." He repeated this twice before holstering his shock stick to grab at the fat man sprawled on the raveled thermal blanket.

From the next bed a black man in a tattered jumpsuit said, "You got yourself one for the Cadaver Service, cop."

"Time's up there," the mechanical cop told the fat man as he shook him by the shoulders. "Rise and shine."

The black man, yawning and lowering his feet to the floor, said, "Cardiac thing, I'd guess."

Two cots to the left of the dead man, Thad McIntosh awoke. He shook his head from side to side, gulped in the thick musky air of the flophouse. Thad was twenty-eight, long and lanky. Right now he was about fifteen pounds underweight, had a three-day beard and a scabby scar on his forehead. He was dressed in a pair of thin track slacks and a surplus coat from the Brazilian war of 2018. Rubbing his crusty eyes, he told the mechanical rouster, "The guy's dead, leave him alone."

The Negro grinned at Thad. "I'm glad you agree with my diagnosis of the stiff. Did you used to be a doctor?"

"Nope." Thad untied his all-season boots, which he'd fastened around his neck for the night.

"I was. It's an interesting story how I fell from grace."

"It always is." Thad put on his boots, yawned.

"No, I didn't always live on Manhattan."

"This man is deceased," announced the mechanical cop.

Thad ran a hand through his dark tangled hair, wincing whenever he came to a lump or a bruised spot.

The lean scraggly man was sitting up again. "Jesus, I don't like to be around when people die," he complained as Thad passed him.

"You came to the wrong island," said Thad.

"Who had a choice?"

The Plaza elevators still weren't working. Thad used the stairs. After three flights he found he was wheezing and panting. He halted on a landing, taking slow, careful

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breaths. Feeling absently into his jacket pocket he discovered a twenty-dollar silver piece. Enough for breakfast anyway. He had no recollection of why he had the money. It was his impression he'd stuck his last ten bucks into the bed meter.

The night doormen were going off duty, turning their stun rifles over to the three men on the morning shift. Campfires were smoldering all over Central Park, their smoke mingling with the gray rain and the thin light of this November daybreak.

"Maybe I should have slept in the park last night," Thad said to himself. "Then I'd have thirty this morning instead of twenty."

A Cadaver Service doublegator ship came hovering down through the heavy rain to land at one of the entrances to the park. It retracted its wings, went wheeling through raw fields and bare trees to gather up the men who'd died there last night.

"On second thought," said Thad, "I guess I'm glad I didn't."

The faxprint robot who sold the *Manhattan Times* near the ruined fountain across from the Plaza was lying on its back, cashbox ripped open, alarm bell still faintly tinkling. Thad stopped long enough to make sure the looter hadn't missed any change, then moved on.

Another CS-doublegator was flying low overhead. It drifted on, landing on Fifth Avenue where there'd been a nightgang skirmish.

The rain kept on falling, cold and hard. When Thad passed Alfie's Pub in the Fifties the battered old chef robot out front said, "All you can eat, 'bo. Only fifteen smackers."

Thad slowed. The pub food wasn't that bad and fifteen dollars wasn't a bad price for breakfast, even though "all you can eat" probably meant a second slice of soytoast and an extra glass of near-juice. Thad went inside.

The familiar smell of old wood and urine. One of the stained-glass pub windows was still intact and it threw watery kaleidoscope patterns on the bare noryl plastic tabletops. About a half dozen rundown men were seated around the place. The scent of maple syrup was being piped out of the scent-valves under the beamed ceiling.

Thad walked on back to the serving counter. A huge headless robot with six silver arms presided over the food. "Hotcakes, sausage and hash browns," ordered Thad.

"Let's see the color of your money," said a voice from the speaker grid in the huge robot's stomach.

"Here." Thad held up his silver piece, gripping it tight between thumb and forefinger.

A silver palm came reaching out to Thad. "Put 'er there." A slot in the center of the hand glowed.

"Breakfast is only fifteen dollars, isn't it? I get five bucks change."

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"You'll get it, buddy. Fork over."

Thad stuck the money in the slot, the hand was withdrawn. He waited a few seconds before asking, "Where's my five dollars?"

"You ordered hotcakes, sausage and hashbrowns," said the voice box. "You want those made out of soy or kelp?"

"I want my five bucks."

"Myself, I'd recommend soy."

"Damn it." Thad put his hands on the edge of the metal counter which separated him from the big serving mechanism. "Give me my damn change and . . . ow!" An electric charge came sizzling through the counter. It made Thad fling his hands up, bite down hard with his teeth. He felt a little dizzy, his left leg didn't seem quite in control.

While he was still swaying in front of the big robot, two human hands grabbed his arms. "We don't like troublemakers here, bud. Manhattan may be ninety-nine percent crooks and deadbeats, but Alfie's Pub strives to maintain its tone."

"Give me my money."

"We're on to that dodge, too," said the large gray-haired man who had hold of him. "Out with you now, and don't come panhandling around Alfie's again."

"God-damn it, you're not going to screw me out of the whole twenty."

"Out, out." The big man hustled Thad to the door, shoved him into the rain-filled morning.

Thad went dancing sideways across the rutted pavement, stumbled at the curb, fell on one knee into the gutter. He grimaced, got up, his nostrils flaring. "That's my last twenty."

A clean-shaven blond young man was standing in front of the pub entrance now. "Wait," he said.

"You another damn bouncer?"

"I have nothing whatsoever to do with this place," the blond young man assured him. "But perhaps I can help you." He put a hand against Thad's chest. "You're Thad McIntosh, aren't you?"

Thad blinked, then nodded. "Yeah. I don't know you, though. Do I?"

"I'm recruiting people for a—"

"Nope," said Thad, shaking his head. "I don't want a job. I had one of those once, plus a wife and a house in Westchester. That was back in . . . back in 2027. Three long years ago, that was. I don't want any of that anymore."

"This is only a part-time job," explained the young man. "A few hours of work at most. We'll pay you two hundred dollars."

"Two hundred dollars?" Thad took a step back on the wet street. "To do what?"

"A simple few hours of work, work in your own line."

"I was an account man with Persuasion-Tronics. You're talking about some kind of ad work?"

"More or less." The blond young man slid a hand into an inner

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pocket of his waterproof tunic. "Here's twenty dollars. That was what you lost, wasn't it?"

Thad reached out for the silver piece. "Yeah."

"Think of this as a bonus for an anticipated job well done." From the same inner pocket he took a blue fax card. "You know where the library ruin is?"

"Forty-second and Fifth? I've slept there quite a bit."

"There's a boarded-up soy-doughnut shop directly across. Take this card to Mr. Ferber there. He's doing our recruiting."

Thad pocketed the card. "How do you know I won't simply take your twenty bucks and wander off?"

"I know enough about you to think you won't," replied the young man. "Besides, I can always find you again."

"How can you—"

"Better get going. Mr. Ferber will be anxious to see you."

"O.K.," said Thad. "O.K., and thanks." He started off in the rain toward Forty-second Street.

II

Rain was getting into the place. It dripped down through zigzag cracks in the low buff ceiling, sizzled around the dusty light-strip fixtures. The uneven thermal floor glistened with tiny pools of water. Shaking himself twice, Thad crossed the small room and stopped before the desk against the wall. There was no one behind the desk, but a dented, old-fashioned secbox rested on the edge of a plyoblotter.

"Mr. Ferber, please," said Thad as he held out the blue fax card toward the machine.

"Wait your turn," replied the square black secbox.

There were four other men in the room, all older than Thad. There were three shaky-legged contour chairs. The fourth man sat on the wet floor, his legs forked straight out in front of him.

Thad told the machine, "I thought Ferber was anxious to—"

"Take a number and wait your turn."

Thad noticed a numbered chit easing out of a slot in the secbox. He took it.

The man on the floor mentioned, "You can get a cup of syncaf if you ask. While you wait."

Thad turned again toward the machine. "Can I get a cup of . . ."

A vinyl cup popped out of the back of the secbox and was filled from a chrome nozzle. "Compliments of the management."

The syncaf was lukewarm, though one of its additives caused it to give off steam. Thad carried it carefully over to a boarded-up window, then sipped at it. "What kind of job is this exactly?" he asked the man on the floor.

The man was forty-two, gray. He

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had two fresh gashes crossing his upper lip and the teeth he was wearing weren't his. "Not exactly sure," he said. "Supposed to require some brains. Had some once. May still. Used to be a home-book-machine repairman and . . ."

Thad squatted down beside the man and stopped listening. It was a knack he'd developed toward the end of his first year on Manhattan. He drank his tepid imitation coffee, let his eyes half close. After almost two hours his number was called.

Stretching up to his feet, Thad went into the next room. This one was a little larger, equally dusty and damp. A freckled man in a pin-stripe tunic was sitting in an inflated sofa chair, a dictet unit resting on his knee. "Mr. Ferber?" Thad asked.

The freckled man glanced up. In a low voice he said, "Go on through that door on your right." As Thad went by him, the man asked, "How many more of those crumbums out there?"

Thad said, "I'm the last."

"Ah, great, splendid." The freckled man tossed the dictation machine to the floor. Rubbing the back of his neck, he said, "This kind of subterfuge always bores the . . . well, better get in there."

Thad went through the indicated doorway into another dusty, rain-damaged room. A short, stocky man was pacing the bare floor, hands locked behind him. "How you feeling, McIntosh?"

"Hungry," answered Thad. "What kind of job is this going to be?"

"It's going to be a son of a bitch," the short, dark man said. "I'm Crosby Rich."

"Oh, so?"

"You don't know me, but a lot of people do, off Manhattan," said Rich, still pacing. "Which is why we had to play all these dumbbell games with you. Would you like a sandwich? I brought a half dozen with me."

"Sure." Thad watched Rich put a stubby hand into an imitation wicker hamper on the floor. "You mean you're not interested in hiring any of these guys?"

"No, I'm not interested in hiring anybody. Except you, McIntosh," said Rich. "How about sealoaf on millet bread?"

"Anything's O.K."

"When'd you eat last?"

"Lunch yesterday."

"Here." Rich tossed him the plyowrapped sandwich. "I've seen a lot of descents, McIntosh, but I really—"

"Talk about the job." Thad unwrapped the sandwich, took a bite. "Lectures I can always get."

The stocky man had his hand back in the hamper. "Huh, that was the last one. Did I down five sandwiches while I was waiting for you? Huh, going to have to watch that," he said. "I'm with the Opposition Party, McIntosh, working as a sort of troubleshooter."

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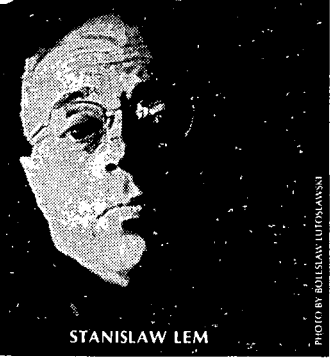

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Thad nodded, went on eating.

"We believe neither the Republican-Democrat Party nor the Democrat-Republican Party can do much for the country. The RDs, since they've come into power, don't seem to be able to avoid a war with the South American Organization of States. We're headed right for it," Rich said. "You were a registered OP member."

"Back then," said Thad, chewing. "Before."

"So you probably agree with our positions on things. You no doubt share the goals which we—"

"Is this leading up to what you want to pay me two hundred dollars for?"

Rich sighed through nose and mouth. "Isn't your curiosity aroused at all, McIntosh? We go through all this dumbbell foolery in order to contact you quietly and covertly. Don't you wonder why?"

"Not particularly," Thad said, finishing the last bite of the sandwich. "You said you didn't have any more to eat? Tell you, Rich, after you've lived on Manhattan for a while you learn to exist in very small segments of time. To be curious much you have to think of your life as extending some way in all directions."

"I still can't understand why you gave it all up," said Rich. "You were in a—"

"Got tired of it." Thad put his hands in his jacket pockets, leaned against the dust-smeared wall with one elbow. "What do you have in mind, Rich? You hoping to rehabilitate me?"

"Yes," admitted Rich.

"Put me back on my feet, exactly where I was before?"

The OP troubleshooter shook his dark head. "Not at all. I don't really give a rat's ass about that, McIntosh. Oh, I'm curious, but I didn't come here to do you a good turn. I'm here to see if you can do one for me. In order to do that you're going to have to stop being a deadbeat for a while."

"Only a while? Not permanently?"

"Once you do my job you can come back here and roll in any gutter you please."

"And it pays two hundred dollars."

"No, it pays fifty thousand dollars," said Rich. "To start. And if you live through it you'll get another five hundred thousand, at least."

Thad straightened, rubbed both hands through his tangled hair. "A half million? That's not bad," he said. "But it sounds like this isn't going to take only the few hours your street man promised."

"It may take the rest of your life."

"You're implying the rest of my life may not be very long if I go to work for you?"

"Yes, there's that possibility. The plan we have in mind may not succeed."

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Scratching his stubbled chin, Thad asked, "O.K., what is it you want me to do?"

"Basically," replied the stocky Rich, "you have to find out the nature of something called the Hellhound Project."

"And just how do I do that?" asked Thad.

"By being somebody else," Rich told him.

III

The olive-green air cruiser flew clear of the rain and into bright afternoon sunlight. In the control seat Rich said, "I'm glad you agreed, McIntosh. It saves me from hunting down the other seven possibilities. You're the only one in the East. One fellow's out in what's left of Flint, Michigan, but we suspect the plague may have left him something of a dumbbell. The others are scattered all over the map."

"I haven't accepted the job." Thad was slouched in the passenger seat drinking a cup of syncaf. This one was hot. "I agreed to come over to Westchester with you to discuss the thing further. Long as you're going to pay me five hundred dollars merely for that, I'm agreeable."

"Look down on your left. We're flying over your old home . . . no, too late. Missed it."

Thad hadn't turned his head. "How come your cruiser says 'Olexo & Balungi, Para-Attorneys at Law' on the side and not 'Opposition Party'?"

"Because if anybody found out what we're up to they'd probably kill me before I can do anything."

"Oh." Thad drank more of his imitation beverage. "Would they include me?"

"You especially."

"This Hellhound Project is so important?"

"Apparently," replied Rich. "We've lost five OP people this year. So far all we know is the name of the operation and the fact that it's a new weapon of some sort being developed by one of the branches of Walbrook Enterprises."

"Took you five men to find out only that," said Thad. "And me, all alone, I'm going to uncover the whole story and come out alive."

There were new lines on Rich's low dark forehead. "I don't guarantee you'll come out alive," he said. "Though if you ask me you're not alive now, McIntosh. Huh, I've read up on you. An IQ of 185, a brain potential score of . . . O.K., I promised no lectures." One stubby-fingered hand reached out to punch a landing pattern. "A fellow with your abilities, though, I still don't see why you—"

"I got tired." Thad slouched further into his seat. "In fact, I have a feeling I may get tired of your job any minute now."

The olive-green cruiser drifted down through the clear sunshine, leveled and went skimming over

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the tops of decorative all-weather imitation pines. "Westchester Country Club Number 26," said Rich as the cruiser circled over the pink-paved landing area.

"They'll never let me in."

"The place is temporarily shut. OP is using it as a briefing depot, until the government catches on. Then we move again."

The cruiser bounced slightly twice, grew silent. The seat released Thad. Rising up, he asked, "What about food? Is there anybody around to fix lunch?"

Rich jumped free of the cruiser. "The servomechs are all shipshape," he said. "What's today, Tuesday?"

"I think so, why?"

"Tuesday is Mexican-American style food. Each day is different, they're set that way. Do you like—"

"My tastes have become catholic in the last couple of years."

Two young men casually holding stunguns nodded at Rich from inside the main dome of the country club.

"Any trouble?" he asked, stepping inside.

"Nothing," one of them answered. "Dr. Rosenfeld called to say he'll be an hour late."

"Huh." Rich led Thad up a twisting pastel ramp.

Thad asked, "Who's Dr. Rosenfeld?"

"Your family doctor."

"From what family would that be? I never heard of the guy."

Rich stuck his thumb and little finger into a print-lock on a corridor door. The door slid to one side. "I'll be briefing you in one of the dining rooms. You'll appreciate that."

"Don't get too feisty about my being hungry," suggested Thad as he followed the squat OP troubleshooter into a bubble-shaped room. "If I wasn't hungry I wouldn't have come to you at all."

"Then we would have gone to you," Rich assured him. "Some subtle way or other." He marched to a long white table at the end of the room. It was the only rectangular table in a roomful of round ones. All the windows in the big room were set at black. "Sit down, we'll get started."

Thad took a tin chair two seats over from Rich and, without waiting to be told, dialed a meal on the order panel at his place. "Can I get you something?"

After a few seconds hesitation, Rich said, "Not now, thanks. Turn around so you can see those monitor screens we've hung up on the wall over there."

Thad did. The second screen in a row of five showed muddy color footage of a young man, grinning, leaning against the rail of some kind of seagoing craft. The young man was lean, lanky, about the same size and build as Thad.

"Look familiar?" asked Rich.

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"Looks vaguely like me. Who is he?"

"Robert B. Walbrook."

"This must be old footage. Robert Walbrook is fifty something. At least he was the last time I saw a newscast."

Rich flicked another toggle on the control rod in his hand. The picture froze on a smiling close-up. "This is Robert Bruce Walbrook I," he explained. "This film was shot fifty-one years ago, in 1979. That's Lake St. Clair."

"Where?"

"It used to be near Detroit," said the OP man.

"Detroit I heard of," said Thad. "We lost Detroit . . . when? . . . about six years ago, when that plague got loose."

"Eight years ago."

"I've lost track." Thad gestured at the smiling image on the screen. "So this Walbrook would be around eighty today?"

"No," answered Rich, "he'd be in his late twenties."

"How does he work that?"

"Robert Walbrook was dying of leukemia in 1980. The family, with Robert's consent, decided to try out a new process Walbrook Enterprises had come up with. In fact, Robert was only their third subject."

"What did they do? Freeze him? That was big back then, wasn't it."

"The Walbrooks' process was much more sophisticated," said Rich. "It involved placing the subject in a state of suspended animation, while he was still alive. Walbrook Enterprises thought of the process as something akin to cryptobiosis, a cryptobiosis which would work for human beings. Actually, the process worked quite well but it cost so damn much that it never caught on."

"Cryptobiosis. That's what some of the lower life forms can do to themselves, a kind of long-range hibernation."

"More or less. I didn't know you'd have heard of it."

"A guy with my potential?"

Rich continued, "So there was Robert B. Walbrook I, youngest of the three brothers who founded the whole Walbrook Enterprises opera-

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tion. Lying in a suspension vault in a facility in one of the riot-secured sectors of Detroit. Actually the thing was in Grosse Pointe."

"When that experimental plague virus from the Flint proving ground got loose it pretty much finished off Detroit and environs." Thad's Mexican-American meal had just popped up through a slot in the banquet table. Picking up the noryl plastic utensils, he commenced eating.

"That's why OP is going to try what we're going to try," said Rich. "Something over two and a half million people died, there were three weeks of rioting, looting and indiscriminate smashing carried on by people the plague didn't kill right off."

Swallowing, Thad said, "The vaults where Robert was stashed . . . they got destroyed?"

"Right down to the ground. The two dozen bodies stored there were never accounted for."

"So nobody knows what happened to Robert?"

"Nobody we've been able to check, nobody in the Walbrook family, certainly."

Thad set his fork down, leaned back. "And four years ago we finally got a cure for leukemia."

"Exactly. So that if Robert Walbrook's body had survived they'd now be able to revive and cure him."

"Would they really want to, the family?"

"Not all of them, but the way the resurrection laws stand at the moment, they'd have to," replied Rich. "Some of the younger members of the clan would be opposed. Especially a lad named Lon Walbrook, a grandnephew of Robert I, who's making a bid for more power. See, if Robert I shows up he's still technically one of the heads of the whole operation."

Thad rubbed at his shaggy hair. "So you Opposition Party guys are going to try to convince the whole family, the entire rich powerful Walbrook family in their fortified two-hundred-acre estate in Connecticut, that I'm their long lost boy?" He laughed, locking both hands on top of his head. "Some kind of Tichborne claimant come back from the dead. Shit. It'll never work. They'd know I'm not . . ."

"Sure, looking at you the way you are now. A broken down dumbbell from Manhattan. The smell of you alone would ruin it."

Still laughing, Thad went back to eating. "When I finish here you can give me my five hundred bucks and a lift back to my rundown contemporaries."

Rich moved to the chair next to Thad. "We'll work on you before you ever have to meet the Walbrooks, McIntosh," he said. "The physical work alone will take weeks, the operations."

"Operations?"

"Facial work, fingerprints," Rich

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explained. "We'll have to plant some nearly foolproof caps on your eyes to fake the retinal patterns. Brainwave patterns we can't do anything about. We're not certain anybody ever got Robert I's down and filed away. Then there's the—"

"How did you come to pick me?"

"Our computers did that, using info siphoned from the national data bank. As I told you, you're one of a half dozen or so possibilities. Fellows who come near to Robert I in build, facial structure."

Thad wiped his plate clean with a fold of nearcorn tortilla. "Can I order some more food?"

"Go ahead." Rich looked away. "The thing is, McIntosh, we have every reason to believe the Hellhound thing is a pretty nasty weapon. Warren Parkinson has three more years to serve."

"Who?" Thad was ordering another meal.

"Parkinson, the President of the United States," said Rich. "You know he's had two severe breakdowns since he took office. He may be in even worse shape than anyone suspects. We can't let something like the Hellhound weapon fall into the hands of a man as unstable as Warren Parkinson."

"Maybe the Hellhound Project is something harmless," said Thad. "Walbrook Enterprises turns out a lot of stuff."

"This is a weapon, and it isn't harmless."

Thad's second meal appeared out of the slot. "How long would it take to turn me into a reasonable facsimile?"

"Two months at least, that's the minimum. A lot of background info can be put in while you're asleep."

"You'll provide me a comfortable place to sleep," asked Thad, "plenty of food?"

"Sure, and we'll rehabilitate you."

"That's unlikely," said Thad. "Still, winter's not so far off. This would take care of most of my winter problems."

Rich said, "Maybe you're tired of the life over there, McIntosh. Maybe you feel . . ."

"No lectures, no sermons." After eating for a moment, Thad asked, "Suppose I turn you down. Aren't you afraid I might talk to someone?"

"Should you turn OP down," Rich informed him, "you won't remember any of today. We have a process for that."

"I figured as much," said Thad. "Suppose the Walbrooks don't accept me, suppose they see through my great impersonation? Do I still get paid?"

"If you survive, yes."

"How do we explain where Robert . . . where I've been all these years since the plague hit?"

"We have a relatively plausible

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story worked out. You'll be briefed on it, quite sufficiently briefed."

Giving a one-shoulder shrug, Thad said, "O.K., I'll try it. Doesn't make much difference I guess, not to me anyway. Sure, O.K. When do we start?"

"Now," said Rich.

IV

Dr. Barney Rosenfeld took his hands off the controls of the landcar and locked them on the top of his grizzled head. "You're—you're on your own from here on, friend," he said. "The sound—sound pick-ups will be trained on us once we get through the—the gates." He was a moderately overweight man of thirty-six, his sand-colored hair speckled with gray.

Thad nodded, not saying anything. He was used to the doctor's backtracking speech pattern now. Directly ahead of them rose stone walls, made of the same large black and gray rocks you still saw throughout this part of Connecticut. Only these walls were higher, rising ten feet at least. Heavy gates, made of real wrought iron, barred their entry to the Walbrook estate. Just beyond the gates Thad could sense a force screen in operation. The light snow which was flickering down through the afternoon melted away to nothing when it came near the gates.

"I've got an identification plate implanted in the hood of the car," explained the doctor. "They—they're reading it now."

"They?"

Rosenfeld tilted his head in the direction of the wall. "The security robots."

A low ratcheting sound commenced outside, the metal gates swung slowly inward. The landcar jerked, swaying slightly to the left before it started moving ahead.

"They—they've taken over operation of the car now," explained the Walbrook family doctor.

The landcar proceeded slowly along the black roadway. The force screen was no longer there. When it had gone some five hundred feet, the car abruptly stopped.

"Stick—stick one of your hands out the window, friend," advised Rosenfeld.

The car windows automatically rolled themselves down. Standing on each side of the vehicle now were robots. Each of them was man-size and dun-colored.

"Hand please," requested the one on Thad's side. He had a fine dusting of snow on his cheeks, shoulders and chest. His metal hand was ice cold.

A small cone extended itself, with a raspy click, out of the robot's palm. A tiny blue light at the cone's end scanned the tips of Thad's fingers. The robot let go, saying, "Agrees."

A second later Dr. Rosenfeld's robot repeated the procedure and said the same thing.

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The car windows shut, the machine rolled ahead.

"That—that was to check our finger—fingerprints, friend," said the doctor.

"I figured."

Dr. Rosenfeld had his hands back atop his head. "They—they like to be able to see your hands."

Thad was scratching his crotch with his counterfeit fingertips. "I think I'm going to have to make a few changes around the old homestead," he said. "A half century hasn't made Johnny any less of a fuss-budget." That last word was one which had been current fifty years before.

"You—you can't talk . . ." Dr. Rosenfeld stopped, remembering who Thad was supposed to be. "Yes, friend, you can certainly talk to J.P. about that. Although, as I've told you, the world hasn't improved—improved measurably since you were alive last. There's even more need for security today."

"I suppose Johnny is up to his ass in government work still," said Thad.

"I—I believe so, yes," answered Rosenfeld, watching Thad through slightly narrowed eyes. "Though I'm only one of several—several family doctors and I'm not in on any family secrets."

After the landcar climbed two low hills the buildings became visible—a complex of six enormous white saltbox-type houses, connected by see-through tunnels. Stretching away behind the houses were acres of real trees, maples and birches, all bare and thin in the cold light.

"Johnny's expanded a lot, I see," said Thad. "In my day we made do with only one house, the farthest one on the left, and about thirty acres."

"Fifty years of nothing—nothing but success can—"

"What are those new saltboxes made of?"

"Walbrook nearwood I imagine."

"Since my time," said Thad. "I've got a lot of new products to get myself filled in on."

Their car was jerked off the roadway into a wide circular clearing beside the big square house Thad was pretending to remember.

Two more robots, chrome-plated this time, helped them out of the landcar. "House One, please," said the robot who took Thad's arm.

"We should be taken in to see your—your brother now," said Dr. Rosenfeld.

"Looking forward to it." Thad allowed himself to be guided to the door of the first house.

In the foyer of the big white house a large blond man stood. "You're the alleged Walbrook, huh?"

"You're not kin." Thad turned to the doctor. "I thought Johnny was ready to see me."

"This," said Rosenfeld, "is—is Mr. Gunder, with the United States Government."

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"Agent Lyle Gunder," the large man amplified, "with the Total Security Agency. I serve as a liaison between Walbrook Enterprises and the Government. I screen people." He strode up to Thad. "Before you go any further I'm going to run a few tests on you."

"What—what's this all about?" demanded the doctor, "I conducted—"

"The old guy himself ordered it." Gunder jerked his head at Thad. "You'll have to come to House Two. By the way, what was your favorite vegetable as a kid?"

"Crooked-neck squash." Thad began to roam around the white room. "All the pictures have been moved."

"What was the name of your favorite stuffed toy when you were three?" asked the big TSA agent.

"Doggie," said Thad.

"Which knee did you—"

"Don't let them wear you down, Unc." A tall, smiling young man came in through a side door. He was about Thad's age and looked something like Thad, the altered, worked-over Thad. But he was thicker and there was a difference about the upper part of his face. "I believe in you. Purely on faith, since I wasn't even born until long after they stuck you on ice."

"It wasn't ice," corrected Dr. Rosenfeld.

"I know, Doc," said the young man. "I'm Lon Walbrook, Unc." He clutched Thad around the shoulders. "Bob II's boy. You remember my dad, don't you?"

"A shadowy litfle boy," said Thad. "He used to like to suck on the tips of felt markers."

"That sounds like Pop for sure, Unc. Except he's less shadowy now," said Lon. "He's really developed balls in the last few years. He's down in South Amer—"

"Stop hugging this alleged great-uncle of yours," said Gunder. "I've got to get him over to the research rooms right now."

"Is this any way to treat the walking dead, Gunny?" Lon stood back while Gunder led Thad away toward another door. "I'll see you again up in J.P.'s lair later, Unc. I'm afraid you'll find poor Gramps hasn't held up as well as you."

"I've had a lot more rest," said Thad.

Lon laughed. "I can see I inherited my sense of humor from you, Unc."

"What was your best subject in junior high?" asked the large Gunder. He opened the door and stepped through.

"Paddle tennis." Thad followed the TSA man down an orange-tinted plastic tubeway.

Dr. Rosenfeld brought up the rear, saying, "I'm—I'm still darned if I can see why you have to—"

Gunder grabbed open the door at the tubeway's end. "Why the hell are you here?"

When Thad stepped into the domed anteroom of House Two, he

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saw a lanky, sandy-haired man smiling tentatively at him from far across the room.

The man held a bulky plyo-folder tight against his chest. "Hello," he said across the hollow distance. "Hello, I'm . . . uh . . . well, hello, Father."

Thad grinned, walked over to the tentative man. "You must be my boy, my son Alex." He reached out a hand to the fifty-five-year-old Alex Walbrook.

"Yes . . . uh . . . that's who I am, Father." He shifted the folder up toward his armpit. He lost control and it dropped, flapping, scattering microcards. "Sorry . . . uh . . . this is all rather awkward, isn't it? Encountering my own father again after so long . . . and . . . uh . . . here you are younger than I am." He started to bend toward the fallen materials.

Thad caught his hand and shook it. "It's good to see you, Alex. You've turned out well."

"Oh . . . uh . . . I really don't know, Father," said the son of Robert I. "If you'd been around . . . uh . . . I think I might . . ."

"Get that crap gathered up," said Gunder, joining them. "What are you moping around down here for anyhow?"

On his knees, Alex replied, "Well, Lyle, I was . . . uh . . . I was in the files."

"There's an extensive amount of information filed here in House Two," said Dr. Rosenfeld. "Several—several file rooms down that blue corri—"

"Enough chitchat," said Gunder. "I want to get this guy in where we can check him out real good. Fingerprints, eye patterns, the works."

Alex rose lopsidedly, leaving most of the tiny file cards on the plastic mosaic floor. "Well, I'm . . . uh . . . happy that you're back, Father."

"So am I." Thad patted the lanky man on the shoulder.

"Save your hugging and kissing until we figure out who this guy is for sure."

"You . . . uh . . . ought to remember, Gunder, that I'm . . . uh . . . part of the Walbrook family."

"Uh . . . oh . . . uh . . . really?" chuckled the TSA agent.

Thad took hold of Gunder's arm, pressed. "Let's take our tests."

"I feel this is redundant," said Dr. Rosenfeld, trailing the two of them toward the wide yellow door of the test rooms.

During the next hour six machines, two robots, three human lab technicians and a Negro-tinted android examined Thad. After that, Gunder asked him to wait in an alcove off the enormous gray metal test lab.

"This is quite a setup," remarked Thad as Gunder slid the accordian door shut. "Built it just to run me through?"

"We can do a lot of things down here." The blue accordian door closed tight.

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Thad slouched in a rubber chair, watching the gray unadorned ceiling. He rubbed at his naked backside.

About ten minutes later Gunder returned. "Come on out here, buddy."

Thad strolled barefooted back into the larger room, followed Gunder around assorted mechanisms.

"Show this thing your hands again." Gunder jerked a thumb at the large tank-shaped machine which had tested Thad's fingerprints and palm patterns earlier.

Swallowing, Thad thrust both hands into the waist-high slots. He hoped the Opposition Party technicians had done as good a job as Crosby Rich claimed.

The tank whirred, hummed, then made a faint whistling sound from someplace around back.

"Well?" demanded Gunder.

"Perfect match," said the speaker grid of the machine. "This man and Robert Walbrook I have identical prints."

With lips pressed tight together, Gunder took a deep breath. "Then why did you want to check him out again?"

"Well, actually he has a fascinating life line. I'd predict he's going—"

"Oh, shit." Gunder jerked Thad's hands free of the machine.

"Do I pass?" grinned Thad.

Gunder turned his back, gathered up Thad's clothes from a nearby chair top. "So far, buddy. So far, but I got a lot more tests in mind for you." He threw the clothes at Thad. "Some you won't even be aware of."

"Sock," said Thad.

"What?"

"You left one of my socks on the chair there."

Gunder snorted, went striding away.

V

Thad, Lon and Dr. Rosenfeld moved through nearglass tunnels and saltbox houses, finally reaching House Six.

A chubby pink man with an aluminum right arm was awaiting them at the second-floor landing, shuffling almost imperceptibly on the thick flowered carpeting. "I am Badjett, sir," he said to Thad.

Lon asked, "Badj, aren't you going to hug the prodigal?"

"I am only in my very early fifties, Mr. Lon," answered Badjett. "Therefore I never had the pleasure of serving Mr. Robert I. Come this way, sir."

Lon followed. "We're all going to call on Gramps."

Badjett raised his left eyebrow. He stopped in front of a real oak door, inserted a metal finger in the keyhole. The door swung inward.

The first person Thad saw was not old John Phillips Walbrook but a slim young girl. She was standing beside a high window, a dark girl

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with long black hair. The glare of the declining sun on the snow outside made a blue haze all around her. When she turned to face Thad he couldn't see her clearly, yet he knew there was something special about her. The way she held herself, the way she moved toward him.

"Uncle Robert," she said in her gentle voice. "We're all so very glad you've returned to us." She was about twenty-four and very pretty, in a quiet, delicate way.

"Company manners today, Sis?" laughed Lon. "This is my sister Jean-Anne, Unc. What are you calling yourself of late, Sis? Have you gone back to Walbrook?" He patted Thad on the shoulder. "You're in luck today. I stayed home from Walbrook Enterprises to greet you and Sis is here between marriages. It's too bad Dad couldn't get back from South America in time."

"Won't you come this way, Uncle Robert," said the lovely dark girl. "Grandfather is very anxious to see you."

"This is her lady act, Unc," said Lon. "Fools all and sundry until they—"

Thad took hold of Lon's arm just above the elbow and squeezed. "I suggest you adopt a respectful silence in the presence of your elders."

Seated in front of an empty fireplace was a bent old man in his eighties. He sat far forward, holding tight to the arms of his soft black chair. "We still haven't been able to do anything about age," he said to Thad. "I have a whole lab full of halfwits, overpaid halfwits, working on the problem."

Lon said, "Defense work pays better."

"We even have halfwits in the family now," said J. P. Walbrook.

"It's good to see you again, Johnny," said Thad down at the old man.

"Is it?" The old man studied Thad's face. "If only I . . . well. So you're back, Bob? I apologize for imposing even more tests today, but . . . Dr. Rosenfeld's told us most of your story, and of course I had it thoroughly checked by my security people. Still, I'd like to hear the details from you."

"Dr. Rosenfeld knows more than I do," began Thad. "Apparently—I don't quite know how yet—I woke up when the rioting destroyed the vaults in Grosse Pointe. I have a feeling a couple of other guys who were stored there did, too." He shook his head, which was now a good replica of the real Robert I. "From then on until a few months ago . . . well, I'm not very clear. I must have wandered around from place to place, not knowing who I was."

"Yes," said the old man, "we were always afraid of that. The storage affecting the memory cells of the brain."

"Only temporarily, fortunately,"

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said Dr. Rosenfeld from behind the old man's big black chair. "He began to remember who he was five months ago and—"

"I went to a doctor," said Thad. "I was living in a ghetto area known as Cleveland, Ohio, when I started getting glimpses, pieces of memory coming back. I knew a doctor who was working with the down-and-outs, a man I could trust with what I figured might only be some kind of delusions."

"Fortunately," said the doctor, "the doctor was a man I know."

"All those conventions you hit do pay off, Doc."

"This colleague contacted me," continued Rosenfeld. "I began to do some checking, finally went out to Cleveland myself. I told no one in the family at first. I wanted to be relatively certain this young man was actually Robert B. Walbrook I. As you know, Mr. Walbrook, I made numerous tests before I even—"

"Yes, I saw all that material, Rosenfeld," cut in J.P. "And, Bob, what about the leukemia?"

"You remember we didn't know what all the side effects of the pseudodeath process would be, Johnny," said Thad. "There seems to have been a total remission."

"That's true, as I reported to you," reminded the doctor.

"Glory be," said Lon, "a miracle. And we're not even certain Walbrook Enterprises had anything to do with it."

"You and your sister can leave us now," ordered the old man in a slow voice. "You as well, Doctor."

When the three were gone Thad sat down on the floor in front of the fireplace. It was a characteristic Robert I posture.

The old man continued watching him. At last he said, "You can have your old rooms in the first house again." He held out his hand. "Welcome home, Bob."

VI

It was two days before Thad got a chance to prowl. Christmas Eve and everyone seemed preoccupied. From the window of his suite in the original house he could see the snow falling heavier down through the darkness, swirled by a harsh wind. He left his floating see-through chair and hurried across the room.

Only silence in the hallway. He moved quietly sideways out through the doorway. So far none of the material on Walbrook Enterprises he'd been given to go through had contained one mention of the Hellhound Project. Today all the microcards and wordspools had dealt with the pharmaceutical division of Walbrook.

Since they wouldn't bring any defense and weaponry material to him, Thad decided he'd go looking for it on his own. He got safely down to the foyer. He could hear the kitchen robots now, laughing

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and rattling, joking with the imported French android chef.

Thad let himself into the tube tunnel leading to House Two. He'd seen Gunder take off in a family aircruiser at twilight, so he wouldn't have to worry about the bulky TSA agent.

The blue corridor leading to the file rooms was dimly lit with hanging twists of lightstrip. Seasonal music was flowing out of the tiny speakers planted along the floor.

"Very festive," said Thad. He pushed open a door marked File Room A.

It was long and narrow and smelled of metal. Two walls were made up of metal-doored cubicles. At the rear was a row of retrieval machines and six four-legged microreaders.

Thad had been briefed by OP on how all these mechanisms worked. He located the central index box, which was built into the wall behind the retrieval machines. Squatting, since the control panel was set in low, he studied the face of the box. *The Hellhound stuff may not be stored in this room,* he thought to himself, *but I should at least be able to find out where it is.*

He was reaching out for the punch-buttons when something touched the back of his neck.

"Nobody should work on Christmas Eve."

It was Jean-Anne, dark and pretty, standing with one warm hand outstretched. He grinned up at her. "You move very circumspectly."

"I guess I do. I saw you heading this way from my room," she said. "I wanted to invite you to see the tree get trimmed."

"Aren't all the trees trimmed by now?"

"We always leave the one in the living room here in House Two for tonight," said the girl. "It's an old family custom."

"Relatively old," said Thad, starting to get up.

Jean-Anne slid a hand under his arm. "Let me help you, Uncle Robert."

"Hey," said Thad. "Even though I was born nearly eighty years ago, I'm not really feeble."

The girl let go, smiling. "You're my great-uncle, though," she said. "I can't help thinking of great-uncles as venerable old souls. A lifetime of conditioning."

"I'm probably one of the few youthful great-uncles around," admitted Thad as they left the file room.

"Word is getting out, by the way, about you," said Jean-Anne. "Inquiring people from the Conglomerate News Network, the *Fairpress* and *Time-Life* have been knocking at the gates."

"All to be turned away?"

"Oh, yes. Grandfather doesn't like interviews of any kind and you . . . well, you he wants to handle especially carefully."

The living room was lit only by

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globes of pale orange light floating up near the domed ceiling. In the center of the room stood a six-foot-tall Christmas tree, its strong pine smell filling the big room.

Thad asked, "One of ours?"

"Yes, a Walbrook nearwood longlife tree," answered the girl. "You can tell by the smell, too piney to be real."

"I haven't gotten to our lumber business yet. Also, I can't find anything on the defense . . ."

Christmas carols started up in the far corner of the room. Three tank-shaped, chest-high robots whirred across the room to circle the tree. One robot carried a basket stuffed full of tinsel, another long twisting chains of realistic-looking holly and the third a carton of nearglass bulbs.

"I thought we were going to decorate it," said Thad.

"No, Grandfather always thought children got too exuberant and noisy with jobs like this," said the girl. "So he had these servos built to take care if it. They've been with the family almost as long as I can remember. We can sit on the sofa there to watch."

"Careful, careful, children," warned one of the robots as they passed the tree. "Don't come too close, don't touch."

"Very cheerful." Thad eased down onto a see-through sofa filled with blue-tinted water and restless tropical fish. "How long have you been with the family?"

"This time?" She sat close to him, both knees tight together and pointed toward him. "Oh, something like six months. Every once in a while I get married and then later I come home." She folded her arms under her small breasts. "A very dull chronicle it makes. Tell me about . . . what was it like, being asleep all those years?"

"Tinsel last," said a robot as it began to twine holly on the pine-scented tree.

"It was simply like that," he said, "like being asleep."

"Did you dream?"

Thad thought. "No," he said finally.

Jean-Anne hugged herself tighter. "How awful. It *is* like being dead."

"The next best thing," he answered, grinning. "Do you get much involved in the various family enterprises?"

"Me? Oh, some, but I—"

"Hum." Badjett had drifted into the room. He coughed again, his glistening metal hand shielding his mouth. "We have had word that Mr. Robert II will arrive shortly."

"Good," said the girl. "It'll be nice to have Dad home on Christmas. He's almost always someplace else on holidays."

Badjett's pink face was turned toward Thad. "Mr. John suggests you join him in House Six for a short business meeting in one half hour, sir. Mr. Lon and Mr. Robert II, fresh from his tour of South America, will also attend."

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"Won't my son be there, Badjett?"

"Mr. Alex is not often invited to these meetings, sir," explained Badjett. "His restlessness sometimes annoys Mr. John."

"I see," Thad said to the cherubic butler. "O.K., I'll be there."

A little over a half hour later he was in the study of J.P. Walbrook. A new fire was going in the fireplace. You could still see the Walbrook Enterprises monogram on the pseudologs. The old man sat as he had the last time Thad had seen him, clutching tight to the chair arms as though he were afraid of pitching over onto the floor.

Lon, holding a steaming cup of rum grog, was strutting back and forth in front of the high windows. "Pop's coming home for the holidays, Unc." he said when Thad entered. "It will be very gala. Maybe we can have one of the robots festoon him with mistletoe." He squinted through a window at the darkness. "Looks like the festive red and green lights of his aircruiser fast approaching now."

J.P. asked, "How are you coming with your backgrounding, Bob?"

"Considering I have to fill myself in on fifty years, not bad," Thad answered. "I haven't come across anything pertaining to our defense business, though. Since that makes up such a hefty part of—"

"We'll inform you on that aspect soon," promised the old man. "In fact, we may get into some facets of our government work tonight."

"Now you're back in the fold, Unc, maybe you can help cure Gramps of the habit of holding these meetings of his right before dinner," said Lon.

"We used to have them before breakfast," said Thad, remembering something he'd learned during his long days of OP processing.

Lon made a slurping sound over his cup. "Just so I don't miss the plum pudding tonight."

The door opened. A tall, thin man, bald and slightly stooped, walked into the room. He was shrugging out of an all-season flying jacket. "Good evening, Father."

"You've been informed of the good news," the old man said. "We've located Bob, after all these years."

The bald man took three steps in the direction of Thad. Then he shook his head. "This man can't be Robert Walbrook I," he said.

VII

The old man was out of his chair, pacing the room in a slow, crooked way. Thad was no longer there. Stopping near the high windows, J.P. reached out one knobby hand to touch the glass. "The winters get colder each year," he said. "What do you mean by what you said, Robert?"

His bald son hesitated. "I merely lost control of myself, Father." He was standing, slightly bent, with his back to the fireplace. "You know,

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travel shock, the holiday tensions . . . I blurted out the first thing which came to my mind when I saw him."

"You were a small boy when Bob had to be put away," reminded J.P. He slowly turned. "Stop tapping that mug against your teeth, Lon."

"Sorry, Gramps." Lon had taken the old man's chair and was sitting in it sideways with his legs swinging over one arm of it. "Family squabbles always excite me."

"What makes you say he isn't Bob?" the old man asked his son.

Placing his palm against his forehead and then sliding it up onto his scalp, Robert II said, "I don't know exactly, Father. There's something about him . . . I'm not certain, but he struck me on first glance as being . . . well, not a Walbrook."

"Doesn't have our thoroughbred look, huh, Pops?"

"In a way that is what I mean, yes."

J.P. coughed a dry cough. "You don't imagine I allowed him to come here without looking into everything first?"

"No, I'm aware of what was done by way of investigation," answered Robert II. "I went over all the memos and videograms you sent me, Father."

The old man's head was ticking up and down as he watched the whirling snow. "He checks out on every point. We've gone into the story and it all turns out to be true, the wanderings, the time in Cleveland. And Dr. Rosenfeld ran an incredible number of checks on him before bringing him here to us. Fingerprints, retinal patterns . . . everything matches."

Robert II said, "According to Dr. Rosenfeld."

"That hulking Gunder has also made numerous tests," the old man told him. "That is in addition to the independent checks I had made."

"Many things can be falsified," said Robert II. "Most of Uncle Robert's detailed medical records are lost, it seems. So we have no real proof."

J.P. insisted, "It's much harder to fake his memories, his attitudes, the way he walks and talks. It's all as I remember him."

"From fifty years ago, Father, from another century."

"You'll find, should you reach an age comparable to mine, Robert, that the early years of your life become clearer rather than dimmer as you reach this end of your life."

Robert II rubbed his bare head again. "You'd like this to be him," he said. "You've missed him, all these years . . . while he was in the vault and afterwards when we thought he was dead."

"Yes, I've missed Bob," admitted J.P. "There aren't many like him around anymore. But, Robert, I've never made a decision or a judg-

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ment on emotion. This man is my brother and—"

"So you're going to take him completely into the fold, Gramps," said Lon. "Let him help you run things."

"Yes, I am," said the old man. "That's only fair. It was what Bob and I agreed on back then when he submitted to the pseudodeath business. It's what the law says is fair."

Robert II said, "Certainly, Father. Let's, however, be cautious . . . let's be absolutely certain he is Robert B. Walbrook I."

"I am certain."

"Lyle Gunder is running his own check, using all the Total Security Agency facilities, Father. Nothing will be lost if we wait for the results of that."

"What do you mean, wait?"

"I think Pop means we can still toss a few fatted calves Unc's way," suggested Lon. "We ought to hold off, though, on letting him in on all the family secrets."

"Yes, exactly," said Robert II. "I think that would be an excellent approach to the problem, Father."

"I don't see Bob's return as a problem." The old man pressed his fingers to the dark glass of the window. "Very well, Robert. We'll be, to please you, a bit more cautious than we have been."

"Thank you, Father."

VIII

They didn't try to kill Thad until two days later.

Just after lunch Thad was in his suite of rooms in House One, working in the small den which had been Robert Walbrook I's. Old J.P., as well as Robert II, had provided him with more background material. Several cartons of microcards, bundles of fax copies, but still nothing at all about Hellhound.

His television set out in the living room suddenly turned itself on. "Ladies and gentlemen, the President of the United States."

"My friends," said Warren Parkinson in his nervous voice, "there's nothing to get excited about. I really only . . . well, I like to talk to the American people now and then. And as President of the country, not to mention being Commander in Chief of the armed forces, I have a perfect right. I mean, I can come on and say hello there to my people any old time I want. Well, actually . . . one thing is sort of bothering me. I keep hearing talk about my health . . . what was it Mr. Reisberson of our illustrious *Washington Post-Star* called me? 'A nervous twitch,' I believe. 'That nervous twitch in the White House,' I believe is how he put it . . ."

Thad strolled into the living room, tried to turn off the set. It wouldn't allow that.

"I mean," continued the President, licking his lips, "I only last week had a complete—really head-to-toe—physical. I'm—and here I'm

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quoting the Surgeon General himself—I'm 'shipshape'. Look, I even brought you copies of my X-rays and my electrocardiograms and my brainwave recordings to look at. Well, admittedly the old brain does show a slight . . ."

Thad's phone rang. "Hello?"

The dark lovely Jean-Anne showed on the small square screen. "Care to take a walk, Uncle? Or are you glued to the President."

"A walk would be fine, my child."

"Oh, am I still addressing you as though you were venerable? Forgive it. I'll see you out behind House Two in five minutes."

On his way downstairs Thad encountered Alex Walbrook on the staircase.

"Oh . . . uh . . . hello, Father," said the lanky man, attempting a smile. He had his arms full of bundles of fax memos, neatly tied. "I was just . . . uh . . . coming to talk with you."

"What about, Alex?"

The son of Robert I shrugged his narrow shoulders. "Nothing . . . uh . . . important. It can wait if you—"

"I promised Jean-Anne I'd take a stroll with her," said Thad. "Drop in later."

"I'd like to, yes," said Alex. "I hardly get to see you. They don't allow me into many of the . . . uh . . . top-level meetings, you know. And they . . . uh . . . they're going to keep you . . ." He turned the sentence into a cough, closed his mouth on it.

"Going to keep me what?"

"I ought not to . . . but . . . uh . . . you are my father, after all," said the lanky Alex in a low voice. "I'm not supposed to . . . uh . . . know this, but I find things out. It's been decided to keep you out of the . . . uh . . . top-priority things until . . . uh . . . until everyone is satisfied."

Thad grinned. "So the Gunder view of me is shared around the old homestead?"

"Not by me, Father," Alex told him. "But I'm afraid . . . well, you'll be wanting to get to Jean-Anne. You're sure it . . . uh . . . won't bother you if I pop in on you later?"

"Not at all," Thad assured him.

Jean-Anne was already outside when he got there. She wore an all-season hiking suit of black and scarlet, a small scarlet cap on her head. "I like to walk up through the woods, up toward the hills over there."

"I think I'm up to that."

"Let's proceed then, Uncle." She took his hand, leading him away from the complex of saltbox houses.

The day was chill and clear, the thin sunlight tinting the snow a pale yellow. "Our President seemed particularly twitchy today," remarked Thad.

"You've been away. He was al-

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most serene compared to the—"

"I'm a little unsettled by the fact we're doing so much work for the government," Thad said. "With a guy like Parkinson in charge. By the way, I still haven't been given very much about the defense end of Walbrook Enterprises."

"You're not supposed—" began Jean-Anne. She took her hand out of his, touching her fingertips to her cheek.

"Not supposed to be told?"

The girl looked away. "Will you allow me to tactfully change the subject, Uncle? I'm sorry."

"Sure," Thad said. Increasingly since he'd been here the idea of trying to get information from the girl bothered him. The Opposition Party might not like it, but there it was. He began talking about other things.

When they were ten minutes into the oaks and maples a crunching sound commenced off to the right.

"Don't let it bother you," Jean-Anne said when she noticed the turning of his head. "It's Chambers Twenty-six probably."

"And who's he?"

"Or it might be Chambers Twenty-five. Grandfather has two of them stationed in this part of the forest," she explained. "Robots, as you might imagine. It's an old-world touch really, they're gamekeepers. Designed to look after the wild life and keep off poachers."

"Do we get many poachers?"

"Not since I can remember. Mostly Chambers Twenty-five and Chambers Twenty-six take care of feeding the squirrels and birds in the winter. Occasionally they shoot a rat."

The crunching grew louder. All at once Thad's back began to feel strange, as though he had a big X drawn between his shoulder blades. He glanced over his shoulder. "Down!" he shouted as he pushed Jean-Anne over into the snow.

The big robot's first shot missed Thad, sizzled the dry bark off a dark oak trunk.

Thad was on the ground, rolling away fast in the snow.

The robot had a blaster rifle built into its right arm. The weapon crackled again. The snow two feet to the left of Thad melted, splashing him with great drops of boiling water.

He kept on rolling, got up and dived around behind another thick oak.

"Stop it, Chambers!" Jean-Anne was crying.

Hunched low, Thad went running through the trees, circling over the hard-packed snow. He got himself behind the big slow-moving mechanism. The robot wore a thick red Mackinaw, and nothing else, over its chrome-plated body. And for some reason a pair of earmuffs were stuck on its thick head.

Thad shinnied up a tree directly to the rear of the thing.

The gamekeeper must have

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heard that. It began slowly to turn.

Thad was in the air, hurling himself toward it. Both his booted feet slammed hard into the robot's back.

There was an enormous clanging thud. The gun-hand went off once more, burning up brush, splashing hot snow. Then the big gamekeeper tottered, toppled forward.

Thad went for mechanism's head, jumping up and down. Cracking and smashing sounded beneath his boots.

Chambers, whichever one this was, gave a flap of the arms. A smell of burning plastic began to spew out of his ears.

"Uncle Robert," said Jean-Anne. "You can stop, he's . . . dead or whatever you call it with machines."

Thad had driven the machine's bright head far down into the hard snow. He stepped back and away, wiping at his face. "Don't tell me that bastard mistook me for a poacher."

"I can't understand what happened." She was still kneeling in the snow where he'd shoved her. She held out a slender hand to him.

He stood watching her for a few seconds before helping her up. "Somebody," he said.

"What?" She brushed away snow.

Thad shook his head, saying, "Probably a malfunction. Yeah, I'm sure that will turn out to be the ex-

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planation. We'd better get inside before the other one makes a try."

"Other one?"

"You told me there were two of them, Twenty-five and Twenty-six," said Thad. "Which one was this?"

Jean-Anne turned her face toward the sprawled mechanism. "I can't tell now," she said.

IX

The paramedical robot handed Thad back his clothes. It gave a negative shake of its ball-shaped head before rolling out of the white metal room.

"Bend over a little further," suggested Dr. Rosenfeld. "Um, yes, everything—everything seems to be just—just fine, Mr. Walbrook."

"They wouldn't have been able to plant a mike in there without my knowing." Thad straightened up, began dressing.

"You—you're not supposed to say anything relevant until I give you the key phrase," the grizzled physician reminded. "Yes, Mr. Walbrook, you're in the pink of condition. That's the phrase." He slipped off his synthskin glove and crossed to let the wall sanitizer work on his hands. "And don't get overconfident about where and where—where not they can hide a bug on you or your clothes. Obviously—obviously somebody out there on the estate is suspicious of you."

"O.K., we can talk now." Short, stocky Crosby Rich of the Opposition Party came into the examination room eating a kelpdoughnut.

"I'll attend to my other patients."

When Dr. Rosenfeld was out in the corridor Rich said, "A dumbbell. So they tried to knock you off, huh?"

"Yep." Thad seamed his tunic.

"Rosenfeld tells me you've been doing a good job fooling the Walbrook tribe," said Rich. "Where'd you screw up?"

"Wait now," said Thad. "If somebody is suspicious I'm not the real Robert, why not simply call my bluff? Unmask me in public, in front of old J.P."

"If they figure you for a spy, they may want to get rid of you quickly and permanently," said Rich. "I'm not sure."

"It could also be there are Walbrooks with purely personal reasons for wanting to do me in."

"You said, in the report Rosenfeld smuggled out, that Robert II accused you of being a fake."

Sitting in a white metal chair, Thad said, "Yeah, that he did. I get the impression the old man talked him out of the notion."

"Robert II would like you to be false," said the small, dark OP man. "Before you showed up there was only one rickety old dumbbell between him and complete control of the whole works."

Thad said, "And this Total Security guy, Gunder, is still checking up on me."

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"We know about Gunder. So far all the pieces of your phony background that we planted are holding up." He took an angry bite out of the kelpdoughnut. "There is one thing, though. Gunder's been able to get a lead on some old medical records of the authentic Robert I. These include things like a brainwave recording."

Thad poked his tongue up under his upper lip to produce a popping sound. "Then I should get out of there soon as I can."

"We may be able to sidetrack Gunder. But a little swiftness wouldn't hurt," said Rich. "Haven't you got anything on the Hellhound Project?"

"Not as much as a mention," answered Thad. "I gather from Alex that there's a gentlemen's agreement to keep most of the security stuff away from me until I've proven myself."

"So they still don't quite accept you as the real thing."

"The old man does. It's Robert II who's plugging for second-class status for me I think," said Thad. "Alex calls me 'Father'."

Rich finished the doughnut. "I only eat these things when I'm in a tense situation." He wandered over to a blank metallic wall, leaned with his back against it. "Rosenfeld tells me the girl was with you when the gamekeeper tried to pot you. Did she maybe set you up?"

"No," answered Thad.

"You sure?"

"She could have been killed herself. The damn machine was shooting all over the place."

Rich watched him for a few seconds. "Keep remembering Jean-Anne is your grand-niece."

"I know who she is."

"Living with all your loved ones over the holidays has mellowed you, McIntosh," Rich told him. "You're not the crusty son-of-a-bitch I dragged out of the lower depths of Manhattan a couple of months ago."

"You turned me into sweet-tempered Bobby." Thad left his chair to walk toward the small OP man. "Don't worry about my judgment being screwed up, Rich."

"O.K., O.K." Rich held his palms toward the approaching Thad. "Get back to the estate now and get us some results. You may—"

"I know," cut in Thad. "I may not have all that much time."

Nodding, Rich repeated, "You may not have all that much time. We aren't certain what Lyle Gunder and his Total Security boys may come up with. Besides . . ."

"Somebody out there may try to kill me again."

X

The second attempt came the following day.

Early in the afternoon Badjett tapped discreetly on the door of Thad's den with his aluminum fist.

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"Beg pardon, sir. Mr. John would like you to join him."

Pushing aside a fresh bundle of micrographs, Thad stood. "Sure, O.K."

Badjett entered, holding out an all-season hiking jacket. "I think this will be suitable, Mr. Robert I."

"Suitable for what?"

"Since the day is so mild, Mr. John is in the mood to spend some time out-of-doors, sir."

"I didn't know Johnny ever went out where he couldn't control the temperature." He allowed the cyborg butler to help him into his coat. "Where do I find him?"

"He will await you at the snowcar barn," replied Badjett. "You know where that is, I trust."

Thad grinned. "Yes, I do, Badjett. Just this side of our private lake."

He went downstairs, seaming up the jacket. Instead of heading immediately outside, Thad ducked into the connecting tunnel. *Old J.P. must have something pertaining to the Hellhound in his study,* he said to himself as he jogged through the tinted tube. *Now's a good time to look.*

Thad made it through House Two and halfway along the seablue-tinted see-through tunnel linking it to House Three.

Then a loud rapping commenced on the wall of the tube.

Slowing, Thad looked to his left. Alex was out there, an awkward smile touching his lean face. "Father," he said.

Thad couldn't hear him but he could tell what Alex was mouthing. "Yes, what?"

"J.P. is . . . uh . . . waiting for you down there." He pointed one gloved hand back. "I . . . uh . . . just ran into him and he . . . uh . . . asked me to see what was keeping you." Alex' breath made fuzzy puffballs on the other side of the tunnel wall.

"I thought he wanted me to meet him in his study." Thad returned to House Two and let himself out into the day. By then Alex was gone.

The snow was soft underfoot, slightly muddy in color. The sun felt warm in the hazy afternoon air. Beside the big peak-roofed red synthwood barn the old man was standing alone, bent and resting one knobby hand against the barn door.

"I've had them warm up my snowcar," said J.P. "If you'll help me in, Bob, we can get started on a little ride."

The vehicle had narrow noryl skis on its underside and was the size of a small landcar. It had two passenger cockpits, both open and unshielded. "One of our own designs I see," said Thad as he boosted the old man into the rear seat. "Where to?"

"Nowhere in particular, Bob." The old man buckled himself in. "It's the feeling of swift movement and rushing air I enjoy."

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Thad took the control seat, eased the snowcar out of the shadowy barn. He guided it along level ground, paralleling the wide, frozen lake.

"I wanted to talk with you, Bob."

"O.K., do."

"If you've been feeling that I don't quite accept you or trust you," said the old man, "please try to understand it isn't because I—"

The entire rear-end of the snowcar exploded. Jagged shards of plastic, twisted metal struts, chunks of the compact engine went splattering through the air. The controls seemed to jerk free of Thad as the remains of the machine careened down toward the ice-covered lake.

Thad grabbed the release on his safety belt, jumped up onto his seat and flung himself clear. He hit the slushy snow on his left elbow and knee. His ankle wouldn't work the first time he tried to rise.

After three tries he got himself upright. He spun, went running toward the lake.

The snowcar hung in the air between the snowy ground and the lake. Its backside was nearly gone, a black sooty tangle trailing streamers of harsh blue smoke.

The old man, still strapped in, was slumped far to the left.

The vehicle hit the ice, bounced twice and went skidding in dizzy arcs. The sun-warmed ice groaned, began to crack.

Thad dropped down on his stomach, started to work his way out across the ice of the lake.

The snowcar was moving more slowly. It stopped entirely some thirty feet from the shore.

Reaching the thing, Thad carefully pulled himself up by the runners.

J.P. was alive, but a fragment of the exploded car had torn a wide gash across the back of his head.

Thad ripped him free of the belts, hefted the old man out of the snowcar.

The ice cracked further, with a great wrenching sound.

Flat out again, Thad dragged J.P. back toward the white shore.

"I don't," murmured the old man. "I don't . . . understand."

"Understand what?"

"The gamekeeper," he said. "The gamekeeper . . . malfunctioned. Now the snowcar. It's not . . . typical of Walbrook products. Not at all. I—" He passed over into unconsciousness as Thad got him safely onto solid ground.

XI

"Ever been down here before, Unc?"

Thad was sitting next to a window of the private Walbrook autojet. It was early morning outside. "Back in the Twentieth Century," he answered. "It wasn't New Rio then, of course."

"All the wars of liberation here

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pretty much finished off this part of Brazil," said Lon. "New Rio they built on top of the ruins, proving there's hope for all of us. Right, Sis?"

In the seat next to Thad Jean-Anne said, "I'm starting to have doubts that applies to you."

Lon laughed. "You've been in New Rio before haven't you, Sis? On your first honeymoon as I recall, or was it the second? Were you in any shape to get an impression of—"

"Go sit up with the robot again," Thad told him.

"Don't let our sibling kidding annoy you, Unc." Lon shuffled along the thick airship carpeting to the door he'd just come through. "I came to tell you we'll be landing at our Walbrook field in fifteen minutes. Cheer up, Sis."

"I have," Jean-Anne said to Thad, "mixed feelings about this jaunt, Uncle."

"I'm glad you're along. Being alone in Brazil for a week with Lon—"

"Oh, I enjoy being with you." She smiled a quiet smile. "It's simply that Lon has a way of . . . well, I do know why Grandfather wanted me to accompany you."

"Probably wants you to act as a bodyguard," said Thad, watching the girl's profile.

"Yes, he's been terribly worried since the snowcar accident last week." She locked her hands together, hooked them over one knee. "I know they couldn't find anything wrong with the snowcar or with Chambers Twenty-six."

"It was Twenty-six and not Twenty-five then."

"Yes," she said, frowning. "Don't make it a joke. I'm worried, too. You could have been killed . . . twice. And Grandfather as well, the last time."

"These accidents have had one positive result," Thad told the girl. "Johnny has finally taken me completely into his confidence."

"Yes, he appreciates you saving his life. He's grateful and he's not going to let them—" She stopped herself, then said, "I don't know if you'll be happy about what you're going to learn down here."

"I have to know everything Walbrook Enterprises is up to, including this . . . what's it called again? . . . Hellhound Project."

"Yes, that's the name."

"What is it?"

"You'll see when we get to the lab complex outside New Rio," said Jean-Anne. "Can we talk about something else now, please?"

"Sports, literature, the theater? I'm still fifty years out of touch, but—"

The girl put her hand on his. "I'll tell you about the last time I was in New Rio."

A vast strip of formal garden stretched between the lab complex and the rim of the enormous one-way dome which shielded it. There

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was a jungle brightness all about, intensely green palms, scarlet blooms, great tangles of purple vine. Yellow butterflies flickered high above, multicolored birds called from the branches of high, twisting trees.

Lon laughed, stretching up his arms. "This is what I call a slice of the good life, Unc."

His eyes on the distant cluster of gray domes which made up the Walbrook lab complex, Thad said, "It's greener than Connecticut. Now, when do we get a look at the Hellhound?" They'd been here nearly a half hour, Lon giving them a leisurely tour of the grounds.

"No rush, Unc," said Lon. "Life in South America is paced differently, you know. I'll bet, Sis, you found it even took longer to pick up—"

"I'd just as well go inside." Jean-Anne was holding on to Thad's arm.

"In due time," chuckled her brother. "I thought we'd have a little refreshment out here." His fingers snapped.

Rustling sounded behind them.

Thad spun, shaking free of the girl.

It was a silver waiter robot, rolling toward them with a serving tray. The robot had a black mustache.

"Mustache is my idea," said Lon. "Latin touch, Unc."

"Very sophisticated."

"This is real coffee." Lon took two cups off the tray, handing them to Thad and Jean-Anne. "It's still legal in Brazil. Sorry I can't serve you anything harder, Sis."

"You're much too jolly," the dark girl said. "What do you—?"

"Nothing, Sis, honest. It's simply that New Rio excites me." He took the third cup and dismissed the robot. "Carry on, Joaquim." He made an urging gesture with his hand. "Come on, folks, try this great authentic coffee." When they did, he nodded happily.

Jean-Anne began to frown. She moved to the edge of the mossy path, pushed some high yellow ferns aside. "Lon, these lab animals must have gotten loose."

"Oh, really?"

In a small clearing three chimpanzees were huddled together near the bole of a tree.

"Probably only decorations." Lon slurped at his coffee.

"No, they aren't. See, they have ID tabs on their ankles."

"Huh." Lon beckoned Thad. "What do you think, Unc? Are these lab animals or what?"

Thad joined the others. "They look frightened."

"How can anyone, even a chimp, be afraid out here in this Eden?" asked Lon, laughing.

The chimpanzees grew more agitated now. They held on to each other, pushing back against the tree.

"The trouble with them," observed Lon, "is they know what's

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been happening to their buddies. So we're not going to get a pure surprise reaction. However . . ."

Thad felt something was approaching, but he didn't see or hear anything. Then, for an instant, he saw three tiny flashes of light over the clearing.

The chimps separated, began trying to climb up into the tree.

One of them got as high as the lowest branch. It gave a chittering scream, fell to the ground clutching at itself. It died in midair.

The other two chimpanzees fell. They twitched for only a few seconds, evacuated and died.

"Oh, damn you, Lon." Jean-Anne hit against him with one clenched hand. "Damn you." She turned, went running away from them.

Thad nodded at the dead chimps. "What did it?"

Lon replied, "What else? The Hellhound."

XII

The middle-sized man was holding it between thumb and forefinger. "I'm justifiably proud of it, my boy," he told Thad.

They were all in an oval room deep within the lab complex. The walls were tinted the same soft blue as Dr. E. Jack Nally's one-piece labsuit.

Thad walked a few steps closer to the black doctor. "So that's the Hellhound."

Jean-Anne, pale, was leaning against a work table. "That's one of three types, isn't it?"

"Very good, dear girl," said Dr. Nally. "You're showing a much keener knowledge of our activities these days."

"She's between husbands, Prof," said Lon. "She's got more time to use the other end of her body."

Thad narrowed his eyes, studying the tiny copper-colored object in the lab director's hand. "Looks like a gnat."

"Yes, doesn't it," agreed Dr. Nally. "A harmless little gnat." He let the tiny object roll down into his pink palm, closed his fingers over it. "Yet it is one of the most deadly antipersonnel weapons ever devised, if I do say so myself."

"How does it work?"

"This particular model seeks out body heat," explained the amiable Dr. Nally. "In the demonstration you recently witnessed outdoors, my boy, a few adjustments were made, to make certain it sought out only the monks."

Jean-Anne said, "That was most thoughtful."

"Don't be so peevish, Sis. There was something in the coffee to give you temporary immunity to this particular model."

Dr. Nally tossed the Hellhound, caught it. "What you see here, my boy, is a perfect, micro-miniaturized, antipersonnel missile," he said to Thad. "This particular model, to repeat, seeks out

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its victims by their body heat and then delivers a lethal shot of quick-acting nerve poison. Death usually supervenes within fifteen seconds."

"Kills with a sting," said Thad.

"Similar to a sting, but much more deadly," replied the black Nally. "Incidentally, on this new, improved model we're running about eighty-five percent effective on kills."

"Hey, that's fifteen percent better than the earlier model, Prof."

"Yes," smiled the lab head. "I'm sure it will be more than satisfactory to the Multi-Pentagon in Washington. They almost accepted that last model, until I talked them into renegotiating the contract and coughing up another quarter billion. I think everyone concerned is going to admit it was worth it, more than worth it."

Thad asked, "This is for battlefield use only?"

Dr. Nally's eyes clicked in the direction of Lon before he answered. "This one is, yes. You understand, our own military personnel will be rendered immune to the Hellhounds. I have a miniaturized antimissile device, a spray-on repellent and an oral repellent."

"That was what I spiked our java with, Unc," said Lon.

"Can I see the anti-Hellhound stuff?" asked Thad.

"Shortly, yes. I think the antimissile device, while costlier, affords the best protection," said the black scientist. "As I'll try to demonstrate in a moment. Now, admittedly, an enemy might come up with a countermeasure of his own. However, in wars such as we've been having lately the enemy has usually been of a simple, uneducated sort. It isn't immediately likely they'd come up with anything to stop us. And should they, or their allies, why we can then—"

"There are other types of Hellhound?" asked Thad.

"Yes, my boy."

"How do they differ?"

Lon said, "Wait until tonight, Unc. I'm arranging another little demo for you and Sis over at our tower offices in the heart of New Rio. Can you make it?"

"I'll make it," said Thad.

Thad walked into the tower room an hour after sunset. The sky above New Rio was a dark blue still, the lights of the vast city were starting to snap on. New Rio was a multilevel city, its buildings linked by a crosshatch of ramps. The lights illuminating the twisting, circling ramps flashed on and off, in soft pastel shades. Political slogans glowed on the sides of government buildings.

"Who was your fifth-grade Ceramic Therapy teacher?"

Thad saw Lyle Gunder, the large blond Total Security agent, rocking in a mosaic chair in a dark corner of the Walbrook Enterprises office. "Miss Cooper," he answered.

"Aha!" Gunder bounced out of

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the chair. "Caught you, it was Miss Santos."

"Only for the first part of the semester. Miss Santos ran off with a potter."

Gunder sank back into his tile rocker. "You're absolutely right," he admitted. "Be smug while you can. I've got hold of Robert B. Walbrook I's complete medical dossier, which we originally thought was lost when Detroit and environs went blooey. It's being faxphoned down here to New Rio. Care to submit to a few little—"

"Hold off on the inquisition, Gunny." Lon was standing beside a long tin desk on which sat a television receiver.

"Why this twilight test?" Thad asked him.

"Only following Gramps' wishes," smiled Lon. "He wants you to be filled in on everything, Unc."

"This is a whopping mistake on the old coot's part." Gunder grunted out of the chair. "What was your favorite book when you were ten?"

"The Beasts Of Tarzan." Thad inclined his head at the TV screen. "Some kind of private view, Lon?"

Lon laughed. "You can bet your keaster on that, Unc. Very private."

Gunder stalked to the door. "I'm going to watch over at the TSA building. We've got our own spy camera watching. Don't say I didn't warn you." He left the two of them in the dim room.

Thad asked, "Is Jean-Anne coming?"

"Sis claims she's still unsettled by Doc Nally's little monkey act this afternoon," said Lon. "If you ask me, I think she's going to sneak out of her rooms at the Zombador Hotel and cruise the bars. She's got a great fondness for lowlife saloons and—"

"What do you want me to see?"

"Another Hellhound test," replied Lon. "But of a different model."

"I heard this afternoon," said Thad, "that there was more than one version of the thing. How is this one different?"

Lon touched the side of the receiver. "Much more sophisticated, Unc."

A picture blossomed on the screen. It showed a public square, fringed with artificial palm trees, filling up with people.

"This is over in the workers' part of New Rio," explained Lon. "Our man will be speaking at a street rally in a few minutes. Though with these Latin bastards you find a very cavalier attitude toward getting started on time." He picked up a sheet of faxpaper. "Doc Nally and I figured we'd do these guys in order, the way they are on the list."

"What list?"

Smiling, Lon dropped the paper into a drawer of the tin desk. "We have the names of a dozen men, most of whom belong or are suspected of belonging to a left-wing

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organization they call the South American Organization of States. Two of them are here in Brazil, one in Peru . . . and so on. Gunder's buddies made up the list and our beloved President Parkinson approved the final version and gave us the go-ahead on this whole field-test operation."

Thad crossed to the desk. "Wait now," he said. "I'm starting to get—"

"Right you are, Unc. Walbrook Enterprises is now in the assassination business."

"Who the hell authorized that?"

"Gramps, Dad and me," the smiling Lon told him. "You were still wandering around in the wilderness when everything was set up and O.K.'d, Unc."

"Johnny never would . . ."

"Sure he would," said Lon. "We're talking about a two or three billion dollar contract here. Oops, there's Quartel. Top of the list and considered very dangerous to the best interests of the United States in Latin America."

"I'm not going to let you—"

"Much too late to stop, Unc."

The viewing unit showed a crowd of three hundred people in the square now, waving and shouting as a stocky man of fifty was lifted onto the back of a landtruck. He greeted them with both hands held high over his head.

"The old Hellhound should catch up with him in another few minutes," said Lon. "One of TSA's boys is supposed to release it the minute Quartel shows."

Thad shook his head. He asked, "How do you know it will find him? Him specifically?"

"This model is considerably more sophisticated than the battlefield version," said Lon. "It can be set to go after one specific person. You do that, Unc, by feeding in a lot of info, including brainwave patterns and such like. What it adds up to is there's only one person in the world who matches the total picture the little Hellhound has been fed. It won't give up till it finds that person."

Thad didn't say anything. He rested his fists on the desk edge, leaning toward the small screen. Quartel had begun to speak to the crowd.

"Eventually this version of the Hellhound will bring Walbrook Enterprises a lot more revenue than the military one," continued Lon. "Sometimes we go six months or even a year without a significant war, but annoying politicians are always with us. You came back from the dead at exactly the right time, Unc. Walbrook Enterprises is on the rise once . . . hey, there he goes!"

Quartel's body was quivering. He doubled, clutching himself, silently screaming. Then he pitched off the truck and was hidden by the crowd.

"Just like the chimps," said Lon.

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XIII

Jean-Anne walked close to the edge of the sea-blue ramp. Down below was an intricacy of walkways. In the night-black sky above the tallest tower fireworks were erupting. Great splashes of yellow, scarlet and gold. "They aren't celebrating anything. The current president of Brazil just likes fireworks. It happens every night at this time," she said. "Why did you want to come out for a stroll, Uncle?"

Beside her, Thad said, "It's a little tougher for anyone to overhear us outdoors. Let's keep moving."

"Why are you afraid of being overheard, Uncle?"

Thad said, "For one thing, because I'm not your uncle."

She turned her face toward his. "No, I didn't think you were."

"You didn't?"

"You're very good at it, and I know you've got Grandfather and the others convinced," the girl said. "But you simply are not a Walbrook. I can sense you don't have the inner coldness and ruthlessness we all carry around."

"Even you?"

"Me especially," said the girl. "Lon's right about me. I'm really a very mean and destructive—"

"I have a different opinion," said Thad. "And later on we'll go into it in detail. Right now, Jean-Anne, there's something else which—"

"There was some other kind of test tonight, wasn't there?" she asked. "I know it was something even nastier than this afternoon . . . because of the way Lon insisted I shouldn't miss it."

"Yeah, it's worse. They're testing it on people."

"People?" She slowed, took hold of his arm.

"Tonight, on a man named Quartel. He was—"

"Yes, I heard it on the news. They said it was a heart attack."

"It was a Hellhound. A variation capable of seeking out a specific person."

"Father and Lon," she said. "They . . . I don't know. I didn't really know about . . . all about this Hellhound Project until we got down here."

"Lon has a list of another eleven men they want to use it on," said Thad. "I'm going to get that list. Then I've got to get all the information I have to the people I work for."

Jean-Anne asked, "Who are they?"

"The Opposition Party," he answered.

The girl nodded her head up and down slowly several times. "Yes, they're not a bad bunch." She moved her hand down his arm and took hold of his hand. "Why are you confessing . . . no, that's not exactly the right word . . . why are you confiding in me?"

"Because I'm going to have to

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give up my Robert Walbrook I identity now and get out of Brazil fast."

Jean-Anne said, "You could do that without seeing me."

"O.K., I like you, Jean-Anne," he said. "I wanted to—"

"Listen, how are you going to get out of New Rio and away?"

"Contact a guy down here for transportation out."

"Don't," she said. "I'll take you back to the United States. I can borrow an aircruiser out at the family field and—"

"No, it may not be safe."

"I want to," she said. "Or don't you trust me?"

"I trust you."

"Then we'll do it," said the dark-haired Jean-Anne. "How long is it going to take you?"

"Give me two hours."

"Fine," she said. "I won't pack, since Lord knows who's watching my hotel. I'll visit a few bistros and slip away to the field. Meet me in Hangar Six." She stopped. "I suppose it's proper for a niece to kiss her great-uncle in public."

Black Dr. Nally made a fretful noise. "I can't say, my boy, that I fully approve."

"You don't have to approve, Prof." Lon was seated at a long off-white lab table. "You work for Walbrook Enterprises, which is me."

"I assumed we were going to stick to the authorized list."

"This will make it a baker's dozen," said Lon. "I've just obtained, with considerable effort and ingenuity, the real medical records of my dear uncle. So now you have but to assist me in programming this little Hellhound."

"I can't possibly—"

"You will, or you'll be out on your tail, Prof. We don't need you beyond this stage."

"If I assist you, my boy," said Dr. Nally slowly, "I expect to be—"

"I'll put you on my list of especially nifty people," Lon assured him. He chuckled down inside himself. "After we get this thing ready I want you to wait about an hour before activating it."

"Surely you don't need to worry about an alibi."

"No, no. But I want to be around when this gadget comes for dear old Unc. I've never seen one work up close."

"Ah," said the black scientist. "Yes, that will be interesting. Be sure to make very careful observations."

"You can bet your butt I will," Lon said. "Now let's get to work, Prof."

XIV

The robots let Thad in without any trouble. He stepped into an ascension tube and was carried up to the tower office. The fireworks were still going on in the clear black sky. A huge Brazilian flag, made of

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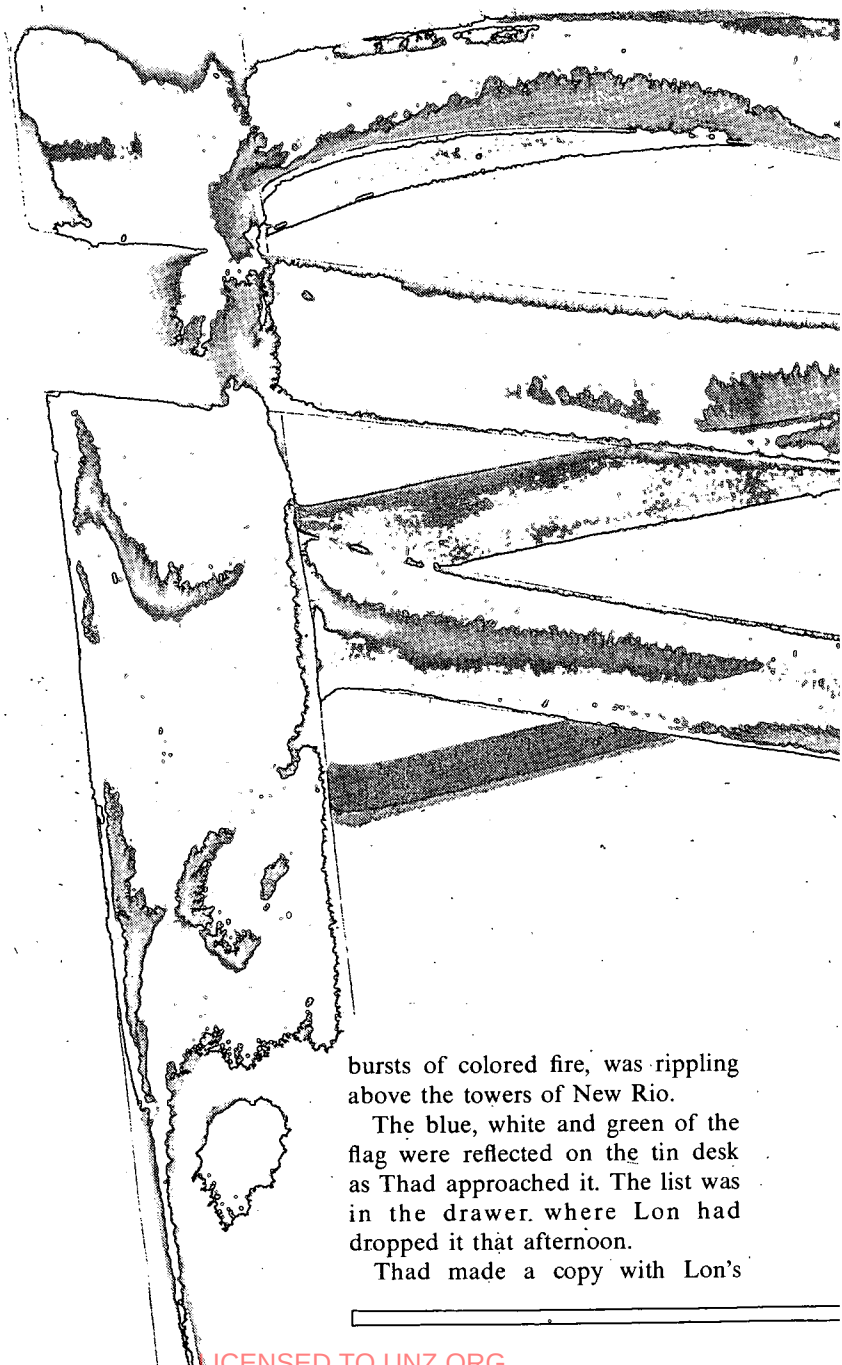

bursts of colored fire, was rippling above the towers of New Rio.

The blue, white and green of the flag were reflected on the tin desk as Thad approached it. The list was in the drawer where Lon had dropped it that afternoon.

Thad made a copy with Lon's

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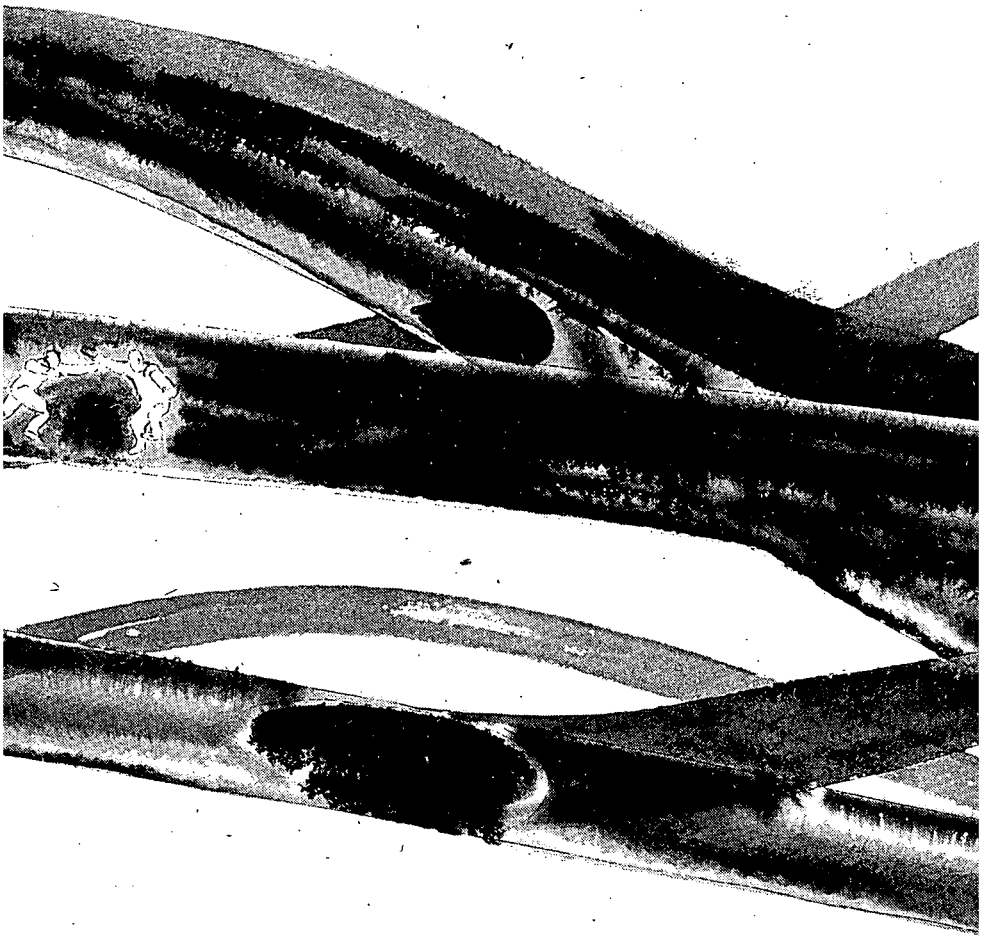

portable copier, which was sitting on a corner of the desk. He was folding the thin page into an inner pocket when he heard the gentle whoosh of someone rising in the tube.

There was a private exit on the other side of the room. You could only use it from inside. He sprinted to that and pushed out into the night. The narrow ramp connecting the tower to the nearest walkway was tinted a pale orange.

Up in the night a patriotic tableau was exploding.

Thad started to run.

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"Hold it!" shouted Lyle Gunder.

Stopping, Thad turned toward the approaching Total Security agent. "Marisue McClean," he said.

Gunder held a stungun aimed at him. "What?"

"The name of the girl I was in love with back in the second grade," said Thad. "Just remembered."

"What were you doing up here?"

"I own the place, remember?"

Gunder said, "If you were Robert B. Walbrook I, you would. But we both know you aren't."

"Do we?"

The large blond man grunted. "We will pretty damn quick," he said as he pushed the gun to within a few inches of Thad's chest. "The medical dossier on Walbrook I has come in. If you don't mind, I'd like you to come on over to the local TSA lab for a few simple tests."

"First thing in the morning," said Thad, grinning.

"First thing now!" Gunder prodded him with the stungun.

Thad dropped to the ramp. He brought his head up straight into the big agent's groin.

"Yow!" The weapon leaped from Gunder's fist.

It was light enough to break through the invisible force barrier protecting the ramp. It went spinning, sparkling as various kinds of light hit it, down and down through the interlacing of ramps.

"You son-of-a-bitch," said Gunder, bent over.

Thad hit him twice more, fighting in the style he'd picked up during his years on Manhattan. He hit Gunder once again.

The large agent's knees jabbed into the ramp surface. He swayed, fell toward the edge. He bumped hard into the unseen guard screen and that slammed him over in the opposite direction. He fell on his left side, his body gradually straightening out into a sharp-angle sprawl.

Thad left him and ran again.

Dr. Nally yawned. He shook his head, squinting at the tiny Hellhound on the white table before him. Then, frowning, he glanced up from the table. He sniffed at the air in the room as he looked at the air-conditioner outlet above him.

Then he fell forward onto his work.

After some thirty seconds a figure, wearing a Walbrook Enterprises gasmask, entered the room.

Nudging the slumped and snoring black doctor aside, the figure began to make some adjustments in the Hellhound, using equipment drawn from a flat tan briefcase.

A few moments later the figure produced a second Hellhound missile from the case. That tiny missile was also worked on.

When Dr. Nally awakened fifteen minutes later there was again only the single Hellhound on the table before him. He listened to his voxwatch. After it told him the

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time, he said, "I'm not taking enough antisleep pills, obviously. Have to up the dosage."

He picked up the miniature missile, carried it to a window and released it.

XV

It started to rain. A warm, slow rain. Lon ducked under the plyoawning of the cafe, poking a finger into the squat Brazilian. "What do you mean, simp?"

"Very sorry, señor," apologized the man. "I lost her."

The rain formed glistening balls on the see-through awning. "Where? Where was she last?"

"As I told you, señor, she vanished somehow out of the Passaro Grande Club up on the twenty-third level," explained the Walbrook Enterprises security man. "That was nearly an hour ago. I returned here to watch her hotel across the way." He had thick, spiky eyebrows, which he raised now. "Perhaps she is with your venerable uncle, Señor Rob—"

"No, she's not. Or rather, I don't know if she is or isn't. Your associate who was watching Unc is equally good at keeping track of people and he's lost him."

"I am truly sorry, señor."

Lon stepped back out into the warm rain. It was over an hour since he'd left the Walbrook Enterprises labs. By now the tiny Hellhound was in flight, seeking out its target. "Damn, I wanted to watch."

The fireworks were still going on, despite the weather. The sky above the intricacy of ramps was full of blurred bright flowers of fire.

Lon decided to go up to the Passaro Grande and ask his own questions. Maybe he could find out something that simp from security hadn't.

He passed a row of vendors, a stand selling lifetime flowers, a coffee cart and one fat woman peddling bootleg sugarcane.

Lon slowed a few feet beyond the last vendor. A very odd feeling was developing in his shoulders and across the back of his head. He looked over his shoulder, frowning.

"Oh, Jesus!" he said.

He could actually see the thing coming for him. Tiny as it was, he saw it droning through the soft, falling rain.

He began to run. "That bastard Nally."

Lon had the impression he could hear the Hellhound, too.

His foot suddenly slipped on a water-slick stretch of ramp. He fell. "That bastard Nally set me up . . ."

Scrambling upright, he ran again.

But the Hellhound was almost on him.

Lon made a dive, trying to get off the ramp. The unseen protective screen stopped him. "Oh, Jesus, Jesus!" He tried to climb up the invisible wall.

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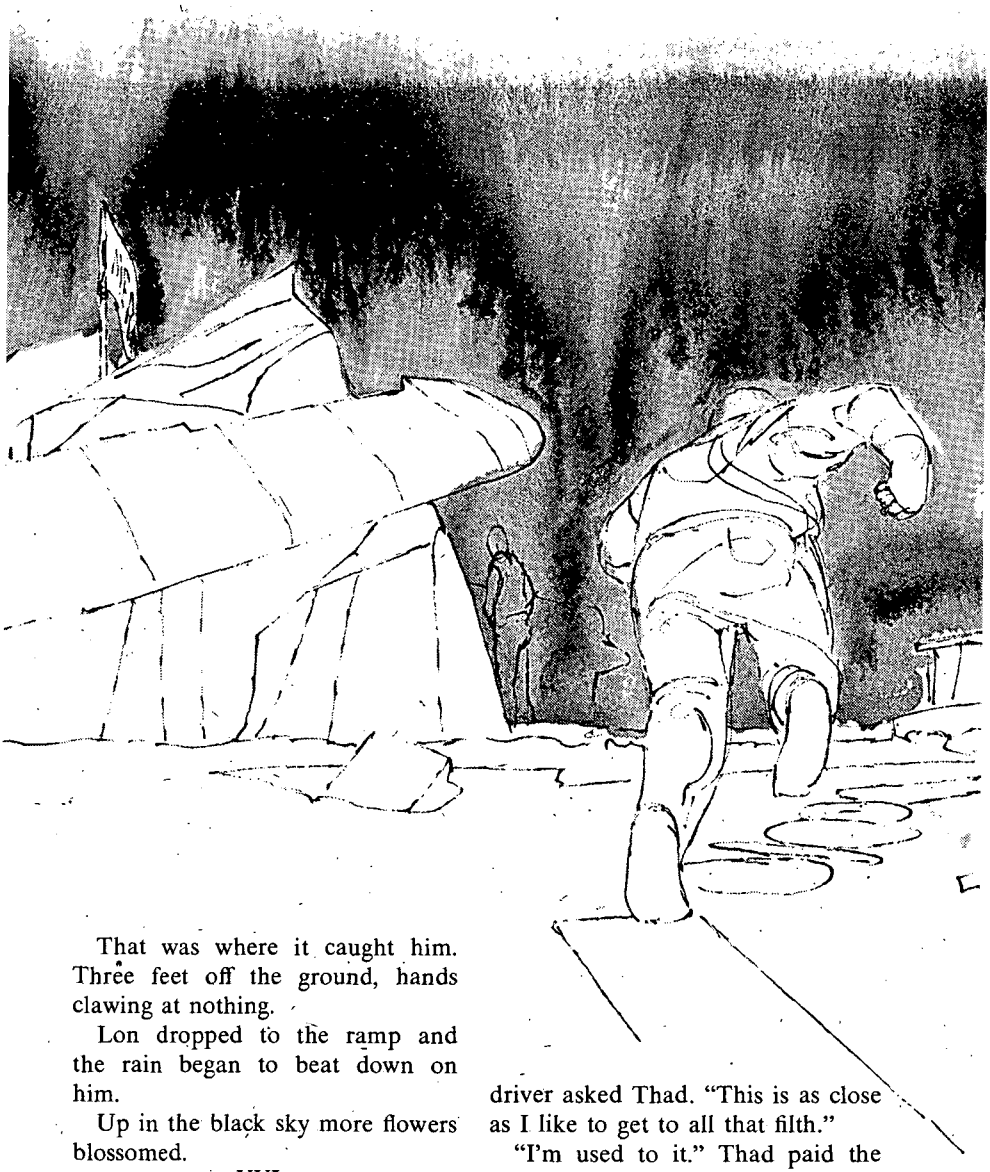

That was where it caught him. Three feet off the ground, hands clawing at nothing.

Lon dropped to the ramp and the rain began to beat down on him.

Up in the black sky more flowers blossomed.

XVI

The aircab stopped, hovering, four feet above the mud. "Would you mind leaping out, señor?" the driver asked Thad. "This is as close as I like to get to all that filth."

"I'm used to it." Thad paid the fare, went down through the bottom hatch. He gripped the edge of the opening, swung back and forth a few times and let go. He landed

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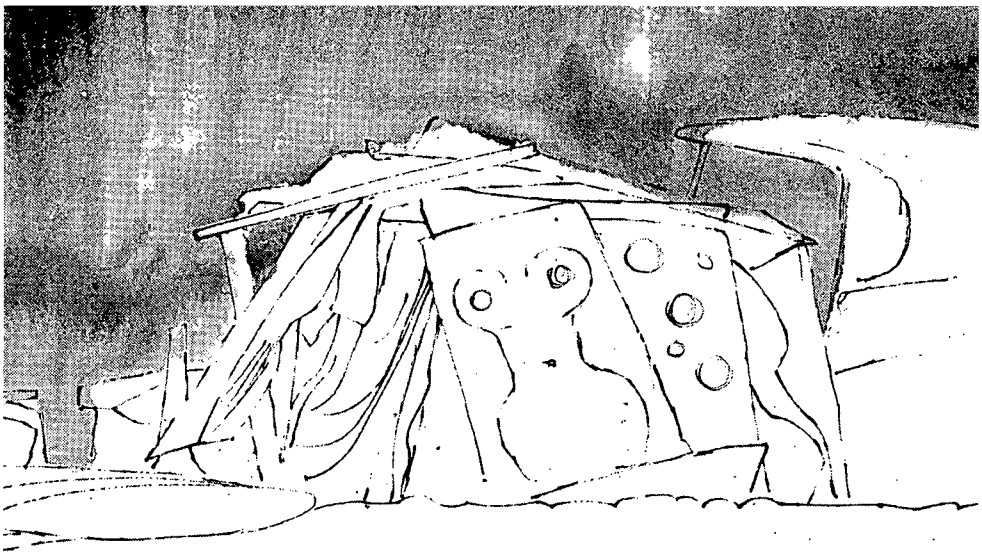

on a length of nearwood planking stretched between two scrapshacks.

"You don't wish me to wait, do you?"

"No, I'll get another cab out." Thad was sure he hadn't been followed down here to the poverty sector of New Rio, beyond the elevated part of the city. Still it was safer not to leave the cab hanging up there.

"Good luck to you, señor." The craft whooshed upward through the rain.

The shack on Thad's left was made of the sides of old freezers, topped with a roof ripped from a war-surplus tank. Beyond it, lopsided cartons and the doors of junked aircabs. A one-legged man was relieving himself against its wall.

Thad walked, tightrope-style, along the plank, jumping to a warped airplane wing that served

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as a link between the next shacks.

Mud splashed up when he hit. A rat, water-soaked, lay dead beside the wing. Thad continued through the cluster of a thousand shacks and huts. The rain tore at him, causing him to lurch against a fence of nearwood scraps. Up ahead, across a bridge of large-size soycan lids, stood the shack he wanted. It was made of the parts of three gutted robot jukeboxes, all strips of silver and gold paint and circles of scarlet and green light. The roof was a thatch of chrome tubing.

Thad knocked on the door just above the speaker grid.

After a moment the bright door inched open. "What do you have to say to me?"

"*Otenta chavenas do chá tepido,*" Thad said into the dimness of the hut.

"I think that's the password."

"What else would it be?" He pushed into the scrapshack. "Where's the phone?"

The old woman who'd opened the door was holding a shining new blaster pistol. "You better say the password one more time."

"*Otenta chavenas do chá tepido.*"

"Yes, that's it." After holstering the weapon in the wide belt wrapped round her one-piece dress, the gaunt woman crossed the floor to thump a bare foot on a batch of chrome. "What do you think of this place, by the way?"

"A little flamboyant maybe."

"It suits me." She lifted the chunk of flooring and fetched out a pixphone. "The only thing I don't like is the rats. They ate my last phone, or at least they carried it off to their lair. Or nest. What do you call a rat's—?"

"Could you wait outside while I make the call?"

"You can talk in front of me. I've got a top clearance with the Opposition Party."

Picking up the special phone, Thad punched out the number Crosby Rich had given him. In a moment the stocky man's face appeared on the small rectangle of screen. "I've got something for you," Thad told him.

The old woman was squatting in a corner, hunting cockroaches with her thumb.

"Good, because a dumbbell thing has happened here and I'm not sure what it means."

"What?"

"Give me what you've got first."

Thad told Rich what he'd found out about the Hellhound.

The OP troubleshooter said, "Little teeny-weeny missiles, huh? That's a bitch of an idea."

The woman cleared her throat.

"They've already used it once down here," continued Thad. "If you've heard about the death of a guy named Quartel up there yet, it was the Hellhound that did it. And they've picked eleven more targets." He took out the list he'd swiped, read the names to Rich.

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"You've got to make this all public. That should discourage them until the whole operation can be closed down."

"Isn't there . . . didn't you say there was some defense against the Hellhound?"

"Yeah, but I don't have it. They've got that stuff stored out at the Walbrook Enterprises labs."

Rich had picked up a kelp brioche and was about to take a bite. "Hey, it occurs to me," he said, lowering the roll, "maybe this dumbbell thing that's happened here ties in."

"You haven't told me."

"Dr. Rosenfeld has disappeared, been gone nearly a day," said Rich. "When we checked out his offices we found someone had snatched—"

"My medical records?" asked Thad, his hand tightening on the pixphone receiver.

"Exactly. Do you—?"

"Holy Christ! They're going to send one of those Hellhounds after me."

"I thought you said you drank some repellent?"

"That oral stuff only protects for an hour or two."

"Well, they could simply be—"

Thad hung up, spun and ran for the door.

"Bad news?" asked the old woman as he plunged out into the rain and mud.

The doors of the pillbar snapped open and a fat man in a wrinkled tourist suit came tottering out. He stumbled, one knee splashing down into a water-filled pothole. His suit pockets rattled, a beer-bottle-brown container of capsules hopped out to go bouncing and then rolling along the rainy street.

Thad had reached the end of the poverty belt and was in the strip of specialty saloons which rimmed the elevated core of New Rio. He hit again the summoning button on the aircab box screwed to the noryl front of the bar. It was now eleven minutes since he'd talked to Crosby Rich.

"Come here, come here," the fat man told the rolling pill bottle.

Thad turned, hurried over to the man. "Let me help you." He retrieved the container, placed it in the fat palm. "Can I help you to your vehicle?"

"That would be a gracious gesture, sir," said the fat tourist as he straightened up. "I can tell by your appearance you are not a footpad or a—"

"Where is it?"

"Where is it?" While he thought, the fat man absently uncapped the pill cylinder and shook two orange and black capsules into his hand. "This is a prewar antibiotic. Can't get it in the States. Makes me feel good all over . . ."

"Is it a landcar or an aircruiser?"

"One of those, yes," replied the dazed pill-freak. "Here's the tag for it, right here." He reached into his coat pocket, causing tiny bottles

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and boxes to cascade out and fall to the wet street.

Thirteen minutes gone now. Thad scanned the night around him. He saw only heavy raindrops. No sign of a minute Hellhound missile. He thrust his own hand into the man's pocket. He located the round plastic parking tag. "Wait right here, I'll bring it."

On his hands and knees the fat man was gathering up his scattered pills. "I'll take a handful of these blue ones while I'm awaiting your return, sir. Very good for chills and fevers, in case I come down with—"

The man was renting a black and silver aircruiser. It was decked on the top level of a five-level automatic parking tower around the corner from the bar. The tag admitted Thad to the upper floor.

He climbed in, started the cruiser and flew away into the dark. Fifteen minutes had gone by.

The cyborg watchman scratched at the platinum side of his head with three silver fingers and two of flesh. "This is sort of embarrassing, Señor Walbrook," he said. He was standing in the doorway of the main Walbrook Enterprises lab building, looking out at Thad.

The night rain was falling heavily, rattling down through the branches and leaves of the decorative gardens. "It's important I get in," Thad said. Twenty-two minutes.

"I realize that, and I know you are now one of the head men in all of Walbrook Enterprises," said the cyborg. He rubbed at the curly-haired side of his head with his copper hand. "The thing is, señor, I've no authorization to admit you. I'm certain it's simply negligence on someone's part, but I—"

Thad swung out and hit the man twice on the jaw. He'd selected a spot which was flesh and bone.

The watchman sighed. His real eye and his noryl plastic eye clicked shut simultaneously as he collapsed to the floor.

Thad took the man's keys and admittance tags away from him before he'd settled into his final slumped position.

The room containing the anti-Hellhound materials was at the far end of the building as Thad recalled.

He was nearly there when a door slid open. Dr. E. Jack Nally stepped out into the corridor and yawned.

"Oops," he said when he saw Thad. "Now, Mr. Walbrook, let me assure you I had absolutely nothing to do—"

Thad pushed him aside. The anti-Hellhound room was three doors farther on. Twenty-nine minutes.

"Good heavens!" exclaimed Dr. Nally behind him. "There it comes."

Thad broke into a run, looking back over his shoulder. A tiny flash

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of copper seemed to be floating down the dim corridor, patiently, toward him.

He hit the door, dived into the room. The heavy door should stop it. What had Nally said about how the damn things worked indoors? Would it wait outside for him, or get in here somehow?

He sprinted to the wall cabinet where the spray-on anti-Hellhound repellent was kept, jerked the door open. The cabinet was empty.

Thad took a quick deep breath, then began to search the room.

"Here we go," he said aloud.

The container was resting on a small table in the corner. He caught it up, sprayed repellent over himself, liberally. Next he located, in another cabinet, the locket-type device Nally had shown them in the afternoon. Thad hung it around his neck, flicked it on.

A faint pinging sounded above him. Thad looked up to see something emerge from the air-conditioning outlet. It was the Hellhound.

It came diving straight down at him.

He dodged.

The tiny missile swerved, kept dropping toward him.

Two feet short of his face it halted, fluttering. It dropped suddenly to the floor.

Thad, absently stroking the talisman around his neck, stepped round the Hellhound. He went out into the hall.

Dr. Nally was still there. "How does this affect my future with Walbrook Enterprises?" he asked.

XVII

The door of Hangar Six stood half open and pale yellow light was spilling out onto the field from inside the wide turtleback building. Big raindrops glowed yellow as they fell through the slice of light.

Jean-Anne hesitated on the threshold, peering into the hangar. There were two tan aircruisers inside, but no sign of any field personnel, human or robot. She ran her tongue over her lips once, then crossed into the building.

"Guess I'll have to rely on my own mechanical gifts to get one of these things ready to go," the dark-haired girl said aloud.

"That . . . uh . . . won't be necessary. I'll handle the . . . uh . . . technical details, Jean-Anne."

"Uncle Alex." The girl turned.

The lanky man was behind her, immediately to the left of the entry way. He held an olive-colored blaster pistol in his right hand. "If you'll get into that second ship, the . . . uh . . . one against the far wall."

"What are you doing in New Rio?" She didn't move.

"Looking after my own interests," Alex replied, smiling his inadequate smile. "As far as your father and . . . uh . . . old J.P. know I'm delivering some unimportant

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messages to various . . . uh . . . Latin American subsidiaries."

"Well, fine," said Jean-Anne. "And why are you lurking around this hangar with a gun?"

"Get into the ship now," ordered Alex. "I want you in there."

"How'd you know I was coming?"

"Oh, I . . . uh . . . I'm very good at finding out things," Alex told her. "It's one of the advantages of being visually uninteresting. Quick, inside."

Jean-Anne walked over to the designated aircruiser, climbed up into the passenger compartment. "What exactly do you have in mind?"

"Another . . . uh . . . accident."

She lowered herself into a chair. "You mean you're the one who tried to kill us with that damn gamekeeper robot?"

"I'm . . . uh . . . very good with things mechanical," he answered. "Though your dear father never bothered to notice that. Yes, I fixed the robot so it would kill you. And I tinkered with the snowcar."

"Neither one worked quite right, though," said the girl. "Which is typical of you, Uncle Alex."

He positioned himself in the cabin so he could watch the front entrance of the hangar. "Tonight's little . . . uh . . . cruiser mishap will succeed," said the lanky man. "Just as Lon's accident will."

"Lon? What have you done to Lon?"

"I . . . uh . . . have done nothing directly," said Alex. "It's the Hellhound I was able to fool with." He gave a thin laugh. "I must admit . . . uh . . . I indulged in a little irony there."

"You sent a Hellhound after him?"

"That's where the . . . uh . . . humor comes in. You see, Lon was intending to use the Hellhound on Robert I," he said. "We're a wonderful family really, aren't we?"

The girl clasped her hands tightly together. "Why are—?" She didn't complete the sentence.

"Yes?"

"I was going to ask you why you're doing this, but I guess I know."

"Yes, I simply want to . . . uh . . . control the whole thing," answered her uncle. "All these years that's . . . uh . . . been my notion. I've been patient, but the return of Robert I has forced me to act a bit . . . uh . . . sooner than I intended."

"I thought you were glad to have your father back?"

"My father's dead," said Alex. "Once, a long time ago, I would have been . . . uh . . . happy about a return. But he left me there too long, too long alone with all the rest of them."

"But he is alive," said the girl.

"No, Robert Walbrook I is dead. He's been dead, really dead and not just pseudodead, for eight years. When the plague hit Detroit

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I . . . uh . . . saw in it an opportunity to put myself one step closer to complete control of Walbrook Enterprises. I sent immunized . . . uh . . . agents into that chaos while the plague and riots raged. They made absolutely certain no bodies remained in the storage vault."

"You could have your own father killed?"

"He could leave me alone with them," said Alex. "Yes, I can do whatever I have to do. I know what . . . uh . . . all of you think of me. But now . . . uh . . . very soon it won't matter anymore. I was going to wait a while longer. But there was a danger that this imposter would be unmasked by Gunder or someone else. Then . . . uh . . . the real fate of my late father would . . . uh . . . come to light."

Jean-Anne let out her breath in a sigh. "You've got this aircruiser rigged?"

"Yes, it will take you up and then . . . uh . . . explode. Leaving only a feeble old man and your father between—"

"What do you mean, it will take *me*? Where's—?"

"Safely dead by now, I trust," replied Alex. "I sent a second Hellhound after him, using his real medical records to feed it."

"You killed him, too?"

He swung out and hit the girl a sharp blow below the ear with the barrel of his gun.

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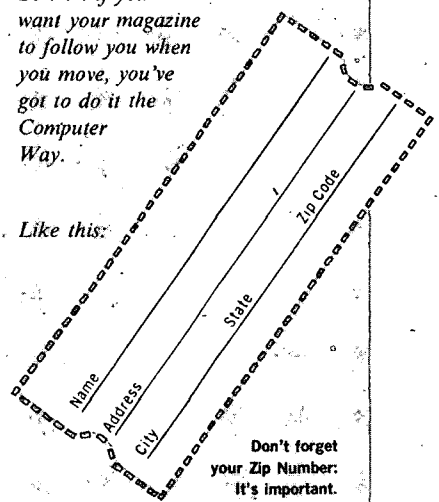

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"Now to open the hangar all the way so that dear Jean-Anne can begin her flight," Alex said. He stepped backward out of the tan ship.

Something caught hold of his feet and hauled him abruptly down. Then the pistol was chopped out of his hand.

"Poor Alex," said Thad, catching the lanky man's arm and twisting it behind his back. "You screwed up again."

"It didn't kill you?"

"Not quite, no."

"How'd you get in here?" Alex asked.

"Back way."

"You suspected I . . . uh . . . was here?"

"Nope," said Thad. "But the way things have been going lately, I decided to be cautious."

Jean-Anne woke up and asked, "Are you alive?"

"Yes, I eluded the Hellhound."

"Am I going to explode?"

"No," said Thad. "This is the other cruiser."

She shifted in the passenger seat, rubbing at her neck. "Where's Uncle Alex?"

"Flat on his back down in the hangar."

She looked out at the darkness they were flying through. "Where are we going?"

"Back up to the United States."

"Aren't you going to turn Uncle Alex in or something?"

"I think the important thing is to get out of Brazil."

"Is Lon dead?"

"I don't know. From what I heard while I was sneaking up under that cruiser, I guess he must be."

She hugged herself. "Uncle Alex was right, we're a marvelous family."

"Some of the individual members are O.K."

The girl asked, "What are you going to do now?"

"Talk to the Opposition Party guy who hired me, give him the rest of the information I have."

"That'll make for busy days for Walbrook Enterprises and the Parkinson Administration," said Jean-Anne. "Then what?"

"Then what for me, you mean?"

"Yes."

"I'm not sure."

"What were you doing before you became my great-uncle?"

"Living on Manhattan."

"Oh," she said, turning to watch him. "You're not planning to go back there, are you?"

Thad shook his head. "No, I'm not," he said. "Maybe I'll see what other jobs OP has to offer."

She smiled. "Good. What's your real name?"

"Thad McIntosh."

"Not a bad name," Jean-Anne said. "Can you get your own face back now?"

"So they told me."

"I'd like to see that."

"O.K.," he promised. ■

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ROGER A. BEAUMONT

As every animal trainer knows: "It's all done with kindness."

SKINNERIAN BOX

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Memo Routing Slip
January 15, 2015
TO: Curator, Museum of Progress and Consolidated Archives, Federation of Military States

FROM: Commanding Officer, 519th Engineer Regiment

SUBJECT: Notes Attached, found in the masonry of San Jaime Detention and Correction Center during remodeling, 12 January 2015, 1317 GMT; cross-check with on-site manual entry records indicates author probably Professor Jose-Antonio Sanchez-Orsini, late Minister of Re-education, Province of Central American States, in custody in Cell 207 in 1993.

April 30, 1993. First day in bush. Tired. Hard to write. Conditioning paid off in march to camp. Still a city boy. Wonder if Maria has found me gone. And if she cares.

May 7. We're relatively safe in cave cache now. Wish I could write all impressions of the country. I thought I was well traveled. I've seen several continents, from highways and airplanes, and most of the big cities. I have never really been in nature before, and there is a certain sauce added by the danger. There is rich flavor to the wind, the trees and plants in these upland woods. City people see the world narrow and flat. I cringe at the thought of how many years of my life I must have spent in libraries, offices, night clubs. My comrades call me "Professor," but any one of them is better schooled for this kind of life.

May 9. We are at seventy-five hundred feet, and there are fewer of us than yesterday. Four of our most experienced were taken while on reconnaissance against the military railway spur. One was a very old salt. He took my night class in Introductory Popular Culture; a good friend and irreplaceable loss. Our grief matched by anxiety of losing a field-wise ex-guerrilla who could have taught us much, and perhaps saved us.

May 15. Marched down toward San Jaime. Hiking down isn't much better than up. Uses new muscles. Brushed with Nicaraguan Special Forces auxiliaries. We lost two and they . . . ? It is more dangerous

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down at this altitude. If they bring up their wholly-armored helicopters, we have had it. We now hold classes in the clearings near our camp. Everyone teaches the others his skills—explosives, medicine, military tactics, weapons, living from nature. It is hard to pay attention with lack of regular sleep, but we must prepare for more losses of men with special skills. Wish I hadn't spent so much time reading revolutionary theory and ideology and learned more instead about electronics, fieldcraft, weapons and medicine.

May 22. Our raid on the San Jaime armory was a success. We lost only three. Fifteen men joined us from the town and three from the garrison. We now all have either automatic weapons or lasers and three cases of thimble grenades. Best of all, we took a radio compatible with the other groups that rose with us. There are eight in all, and it's good to know that the Federation is being stung by more than one gnat. All report good progress. We can communicate with little fear of detection. The messages are prerecorded and transmitted at high speed. Message transmission time is only a tenth of a second. They slow it down on the other end by playing it at a lower speed. The frequency shifts and transmission times are preset by a certain changing reference. I can't write anything about that . . .

June 1. Have been on the move in the Upper Plains along the Jemez River. Several towns have risen and our successes have led to a whole series of popular insurrections and sabotage. We also had our first scrape with armored helicopters. A pitched battle, not a short clash. Four hours of being pinned down and being stung by the dirt clods from near misses. In spite of the loss of twenty men, we have grown to almost a hundred and fifty and are dividing into groups. Great exhilaration when one of our teams used a captured antitank rocket against a helicopter. That sent them on their way. Still, I hope that our pulling back to higher terrain keeps them away. Those old American models can't fly over seventy-five hundred feet or maneuver.

June 10. Our worst week. Rains began and a laser from a satellite began to crisscross our area. We have stopped building fires to cook and keep warm and we hide under shallow caves. When it gets dry again, we can move. If it weren't for the rains, the lasers would burn down the whole country. It's eerie with the woods crackling all around you when they cut loose with them.

June 13. We're in a friendly village. Found myself shaking at the sight of women. Fresh air and exercise get the old engine running. Had to promise to leave the girls

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alone to keep the villagers happy. But it's easy to see why the country people look down on town rats. I've never been in such fine condition. A real country boy.

June 20. Something's gone wrong. Last week, our radio contacts with other groups began to dry up. Just don't come on the air. Except one, in France. Said they were being hunted on the ground by units that seemed to know them by name and every cranny they hid things in. Our electronics man is concerned. Thinks their radio-detection is getting better, or that they can pick up our receiver when it's on. We may have to dump it. Maybe they've broken our transposition code.

June 30. On the run for two weeks. Moving higher all the time. Somebody always right behind. Seem to want us alive. No sleep. Eat on the march. Two ambushes failed. Five have fallen out.

July 1. We stood and fought last night in a valley that one of our men knew well. A good ambush. They fell back. Got a little sleep. But only forty of us left. Many sick, weak. France off the air. Left radio. Worst thing so far. One of their dead was one of our men captured on the first operation. Miserable traitor.

July 7. Fifteen of us in cave. Waiting. Satellite laser worked us over last night. Like a great razor blade, slicing, slicing. My birthday. Probably last. All for nothing. "Just like Guevara," one of my comrades said. A Cold War guerrilla, Guevara, an amateur with big dreams hunted to death by professionals. That's us. God, I hope they come soon.

July 9. There's a loudspeaker outside now. It's Luiz Romero-Dominguez. Can't believe it. Ortez a traitor, yes. But not Luiz. How could he? What can they have done to him? Old hands talk of expert torturers. I wish they'd shut up.

August 1. (I think.) Am in cell 273 of San Jaime Military Prison. They used gas at the end. I woke up in an armored helicopter, manacled. The guards were not Central American. They are from Federation's International Contingent. A Gurkha and a German. Very friendly. When they brought us here we had a decent meal, with wine. Cell is clean and has a mattress. Had diary in boot. They took all metal and plastic, belt and bootlaces. They seem very confident. I'll hide diary in the hollow cot leg or in the wall. . . .

Am back after a physical. No interrogation at all. Just a very long eye exam. They used many pictures of contemporary scenes—including pictures of people in the move-

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ment, perhaps to soften us up. I didn't say a thing. But I am afraid of what may come next. I meant to die in the last attack, but the gas ruined my chance. I keep thinking of Winston Smith in Orwell's "1984" and how he broke under threat of his deepest fear. What is my deepest fear? I have no doubt they'll find out. Nothing else would have broken Luiz.

August 3. More excellent meals, courtesy. Another eye exam. More pictures of food, statues, girls. Perhaps I need glasses. They haven't asked me a thing. I try to keep calm. Every time the interviewer's voice raises I begin to sweat a little. But still no rough stuff. When? I can barely hold my hand steady to write.

August 5. Have had two days with a briefing officer. A young fellow, trim, relaxed. British or Australian, I think. We just chat. Strange feeling I am being watched. Or we are. No mirror in room, or pictures. But feeling is strong. Still no coercion. No discussion of any of my activities. No real menace, but am still tense about his pitch of voice. I cannot see what they are up to. This place is more a hospital than a prison. Perhaps, like the old Soviets, they see political discontent as a form of mental illness.

August 9. Have just returned from what they call Personality Contingency Reprofiling. I was in a small room in a trailer, a cubicle, with a bed and straps. They only use the straps the first time. They gave me a shot of something. I felt relaxed. I would think angry thoughts, fear and the like, but they didn't produce the usual sensation of pain, of physical reaction. My guts didn't tighten and I stopped sweating. Different than being drunk. My mind clear. The briefing officer told me all about himself, after it was over. His unit, the Eleventh Personality Reprofiling Unit, is stationed in Georgetown, and has many volunteers. They are sent all over, whenever local dissidence or rebellion gets out of hand. He said they are developing sociometric sampling methods to detect such trouble in advance of an outbreak. He loves his work, and they let him and his men use the modules on a limited basis. He's only allowed two years in the PRU. Many volunteer, honors graduates of Sandhurst, West Point, the Suvorov, Duntroon and so on. They came in, he said, on a special Nordatlas transport that carries the team and its equipment in special pods in place of its fuselage freight module. The pods are lifting bodies and are dropped in from fifty thousand feet. They were the ones who reconditioned Luiz, and captured us through the use of *dormene* gas. The lieutenant told me that the eye tests analyzed my in-

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voluntary pupil dilation and that my responses went into a computer which then analyzed my areas of greatest pleasure sensitivity. He said it's impossible to fake. That was why our discussions were free-wheeling. They don't care about our unit, since it's virtually wiped out anyway.

In the actual reprofiling process they put a helmet on, over your face, about five minutes after the shot. First there are music and colors, then images of women, and pictures of dreams and experiences, like piñata shards. You can pick out what you like and actually experience it, over and over again, in three-dimensional, full-color, tactile reality, with smell and taste.

When I came out the first time, the lieutenant was smiling, and asked if I wanted to go back. I did. Oh, yes, I did. But I was able to fight the urge to go back, the first time. On the third day, I went all the way to *their* limit, three times. There were more women in the last session. Like the pipe dreams of Harun al Raschid. But real and detailed unlike any dream. The lieutenant did not ask me what I had sought in the module. He said that many people became obsessed with food, and that there were relatively few Napoleons. Most who sought violence wanted it on a man-to-man or woman-to-woman or man-to-woman or woman-to-man basis. No one can stand up to more than three times in the module, the lieutenant insists, and everybody "comes around" by the second day's sessions. He calls it the ultimate weapon in law enforcement, since nobody gets hurt, and everybody gets what he wants.

I asked him if it bothered him to play God. He laughed at that, said that what he was doing was just what everybody tried to do to everybody else, husbands and wives, teachers and pupils, salesmen and customers. The world's not perfect and politics is very wasteful, he said, always stirring up malcontents. Bread and circuses, I murmured and he smiled at that. Yes, perhaps, he said, but in this case, the PRU lets everybody pick his own flavor of bread and the acts in the show.

I said that I felt as if I had been made into an addict, and the lieutenant compared the desire that "patients" or "clients"—he used the words interchangeably—felt for repeated "sessions" with a socially constructive form of hunger. I asked him then if other rebels, guerrillas or whatever wouldn't take our place, especially when they saw us unharmed. Our changing sides might make them madder. He waved that aside, pointing out that plans were afoot for getting the whole civilian population on the PRU "session schedule" over the next decade. Besides, the lieutenant insisted, revolutions are the invention of highly motivated troublemakers, usually an elite playing

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against another elite, using the baser resentments of the mob as a ladder to power. He cited the French and Russian Revolutions as examples, with tiny cadres carrying the ball. People may grumble, but they just want to get along, to live a safe, orderly life. So, the lieutenant said, he just helps to prune back the cadres, until happiness is available for everybody. He thinks that giving up a little freedom for a nice payoff is fair exchange for a world order that will bring real world peace. While political idealists are always talking as if paradise is just around the corner, the PRUs are really going to deliver the goods.

August 10. I have just re-read the diary. It seems as though it was written by someone else, someone who didn't understand. I am so ashamed. I undertook blind violence against a kind and enlightened world order, that has shown me a dazzling world which I cannot describe. They'll let me go back, any time I want. I have a special card that will let me go to regular sessions, and they'll help me get a job. It's a beautiful world now. I understand at last about Luiz, and how much he understood the Federation. I will be proud to help them build an orderly and happy world.

August 12. Last entry. I wrote the bilge of August 10 because I know that someone has read the diary and put it back in the wall. What I said was partly true. They do have control of paradise. They don't use pain or fear; they use pleasure. But you can't go to paradise except on their terms. And I want to go back. I try to fight, and I will try to fight it. But I want to go. It was like so many of the things I read about and chatted about in the faculty lounge. The philosophical arguments about Pavlov, Watson and Skinner were just dry exercises. But we're in a Skinnerian Box, in a maze built by men without any concern for academic niceties. Faust lives and he is king. God help us . . . ■

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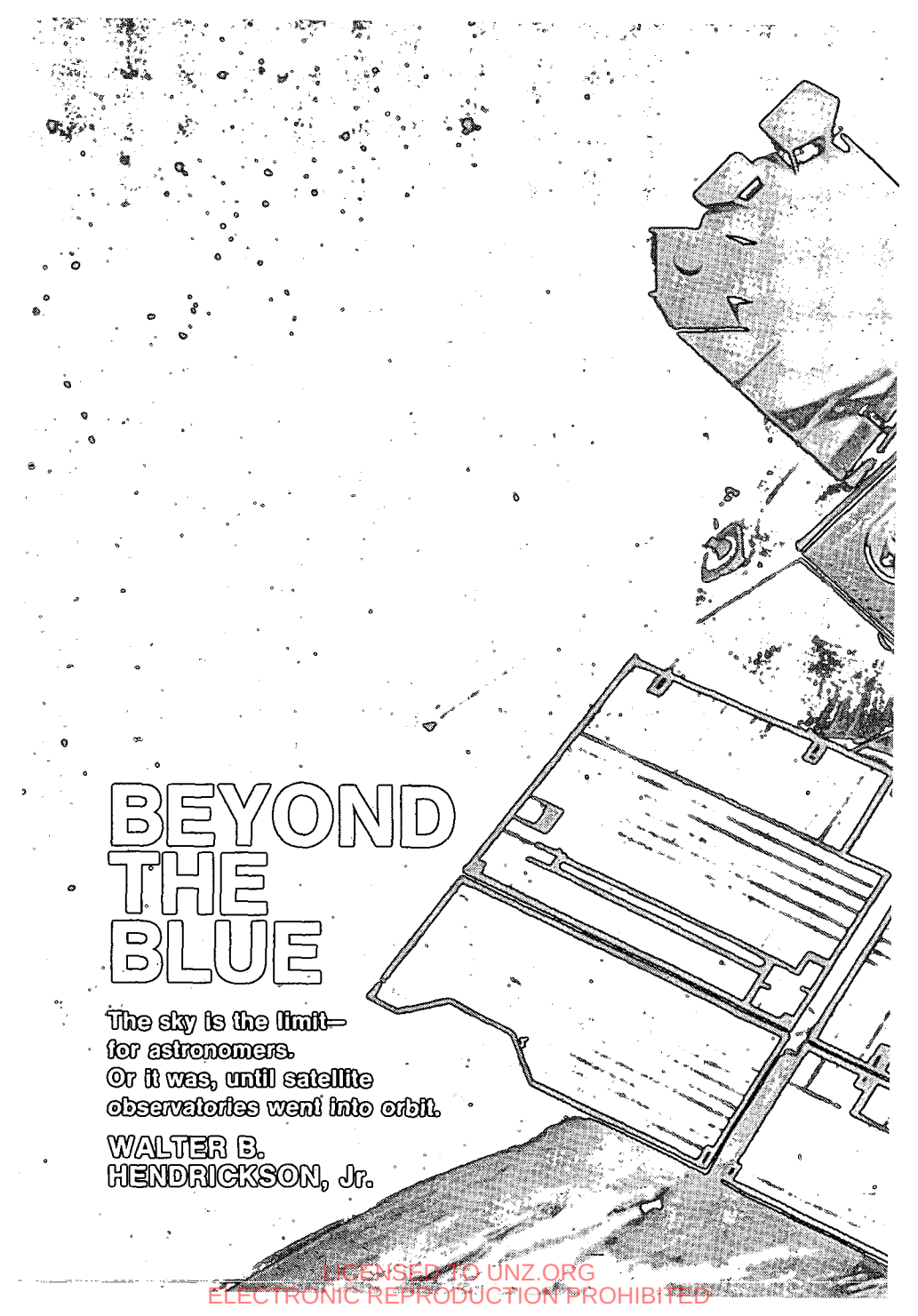

BEYOND THE BLUE

The sky is the limit—
for astronomers.
Or it was, until satellite
observatories went into orbit.

WALTER B.
HENDRICKSON, Jr.

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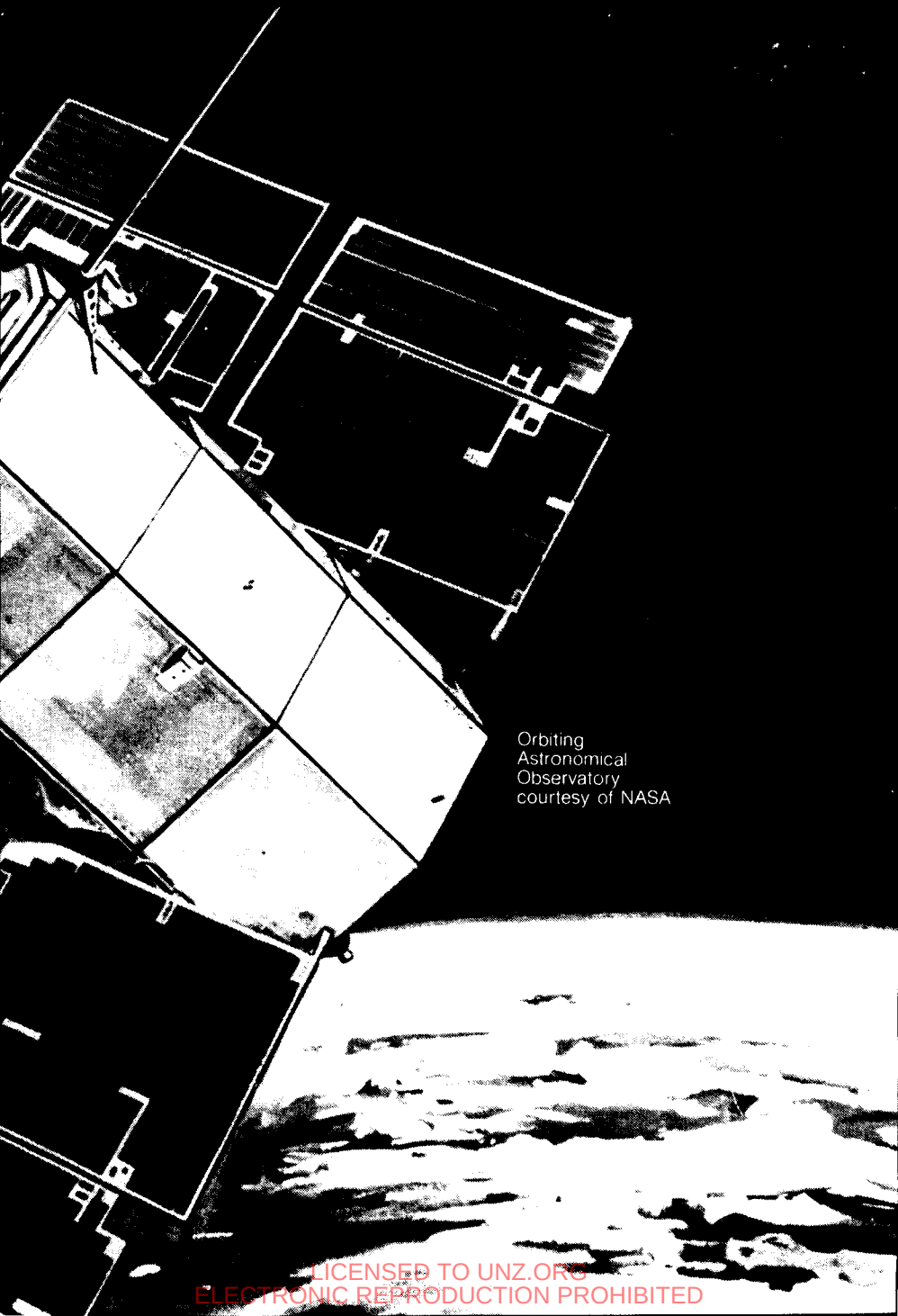

Orbiting
Astronomical
Observatory
courtesy of NASA

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Besides the manned Apollo flights to discover the secrets of the Moon and interplanetary probes uncovering the secrets of the Solar System, an unmanned observatory in Earth orbit is investigating the secrets of the universe.

At present the National Aeronautics and Space Administration (NASA) is spending more than 125 million dollars a year on space astronomy, a good portion of which goes for this Orbiting Astronomical Observatory (OAO). Recently NASA's Astronomy Mission Board recommended spending 250 to 500 million dollars to put larger and better-equipped astronomy satellites into Earth orbit.

Even 125 million dollars would buy a major observatory on Earth, supplied with all the equipment aboard the OAO—and more. With the size and weight limitations of the OAO's Atlas-Agena booster removed, a ground-based observatory could be equipped with really good-sized telescopes for both optical and radio astronomy. For example, the 200-inch telescope at Mount Palomar cost only 6.5 million. Even with inflation the price now wouldn't be much more than 15 million.

Such an observatory could serve generations of astronomers. When any of the equipment failed it could be replaced without too much difficulty. By contrast, the failure of a single component in space can put a whole satellite out of operation permanently.

This is what happened to OAO 1 two days after its launch on April 8, 1966. The battery charger and sequencer malfunctioned and the satellite soon lost all its power. The OAO program was delayed over two years while improvements were made in both the satellite's controls and its astronomical experiments.

However, in spite of these improvements, OAO 2, launched December 7, 1968, has also run into difficulties. Although these were not as serious as in the case of OAO 1, on June 2, 1969, it was noticed that OAO 2 was failing to respond to ground command.

This was a serious problem since the satellite was designed to point itself at specific stars on command from Earth. To correct the difficulty the NASA engineers changed the tone of their signals so that they could overcome the block in the OAO's receiver.

Even when a catastrophic failure does not occur, scientists must put up with a gradual degradation in the quality of the equipment due to its inaccessibility. For instance, when OAO 2 was launched, the four telescopes in the Smithsonian Celescope experiment were capable of recording moderately hot stars one hundred times fainter than those easily visible to the unaided eye, and even fainter hot ones. After about eight thousand hours of operation three cameras still continued to operate although their

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sensitivity had been reduced by factors of six to forty by aging and exposure to radiation. The fourth camera was damaged in March 1969 and hasn't been used since. Had it been possible, all four cameras would probably have been replaced after only a thousand hours of use, as broadcast television cameras are.

With all the expense and difficulties involved in launching and operating an astronomical satellite, it might seem that the money would be better spent on a ground-based observatory. The only trouble is that no observatory on Earth, no matter how large and elaborate its equipment, can do what even a small observatory in space is capable of.

The difficulty is that Earth's atmosphere screens out all but a small part of the radiation from space. Only the visible light spectrum, with a trace of infrared and ultraviolet, and some radio waves, get through. It's like trying to judge the weather while looking through a stained-glass window.

In the daytime even part of the sun's visible light doesn't reach the surface of Earth. It is diffused by the ozone layers in the stratosphere eight to fifty miles above Earth. It is when an astronaut passes through this layer that he sees the sky fade rapidly from blue to black. Soon the sun and stars are shining together.

More important than the blue sky is the subtle screening effect that keeps much of the radiation from the sun and other stars from ever reaching the Earth. The sun and stars send out a continuous blast of ultraviolet light and cosmic rays. All of the cosmic rays and most of the ultraviolet light are stopped before reaching the surface of Earth. The only clue we get to the cosmic rays is from secondary rays caused by their hitting the molecules in Earth's atmosphere.

To make matters worse for astronomers, the atmosphere is often cloudy or at least hazy in many parts of the world. Even on clear nights it causes the images of the stars to shimmer as if they were seen through a heat wave. This makes "Twinkle, twinkle little star/ How I wonder what you are," more than just a couple of lines from a nursey rhyme to an astronomer. It is one of the major problems of his profession.

Using larger telescopes only magnifies the distortion and haziness. So what looks like a clear night to the eye may be completely overcast to the telescope. Fast shutter cameras and image intensifiers help some for quick looks, but long-term observations remain a problem. Also, an astronomer studying the composition of the stars and planets must spend extra time sorting out the elements of that object from the elements in Earth's atmosphere.

The obvious solution to all these problems is to get the telescope

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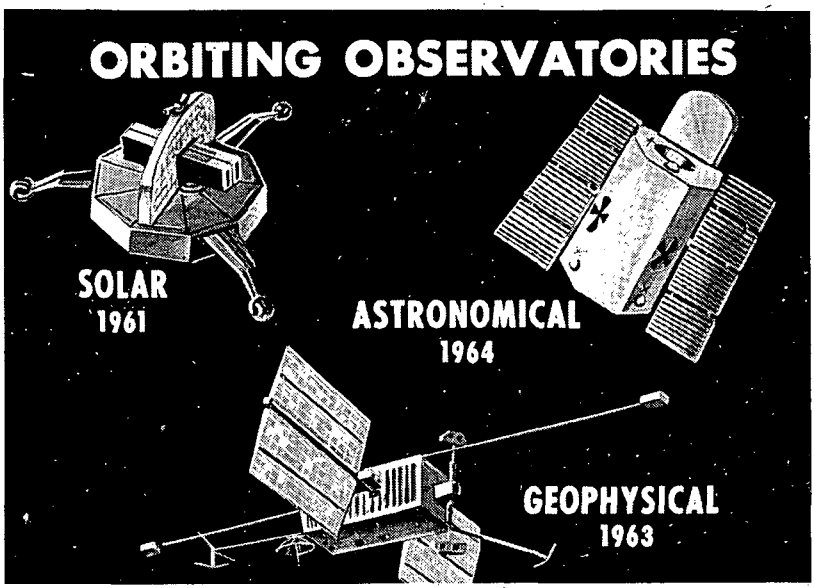

above Earth's atmosphere, or at least as much above as possible. This is why the major observatories are built atop mountains or in clear desert air. However, this isn't much help since more than half the atmosphere is still above them.

Instrumented probes are used to get still farther above the atmosphere. Balloons carry telescopes to above ninety percent of the Earth's atmosphere. However, the remaining ten percent still cuts off much of the radiation from the stars. In fact, it's the thin top layers that block most of the radiation from space. High-altitude rockets carry instruments above even this barrier to radiation, but they can't stay up as long as a satellite.

Many satellites have been used to study cosmic rays, but the first real telescopes in space are aboard the Orbiting Astronomical Observatories. OAO 2 has already completed over a year of successful operation in a nearly circular orbit 480 statute miles above the Earth. At this height practically all of Earth's atmosphere is beneath it and the few stray atoms that are still around cannot block too much of the radiation from the stars.

Although the OAOs are small compared with Earth observatories, they are fairly large as unmanned satellites go. The OAO is the largest of the three orbiting observatories. The other two are the Orbiting Solar Observatory (OSO) and the Orbiting Geophysical Observatory (OGO).

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The OAO is an eight-sided cylinder 10 feet, 4 inches long and 7 feet wide, crammed with 4,400 pounds of instruments. One experiment package, the Smithsonian Celescope, looks out one end of the satellite, and an experiment from the University of Wisconsin looks out the other.

Shutters protect both experiments from the glare of the sun. When either end of the observatory swings too close to the sun, photo cells on that end cause the shutters to close. This protects the sensitive instruments from being burned out by the sun, as the television camera was on the Apollo 12 mission.

The experiments and the satellite's controls are powered by more than 74,000 solar batteries on two panels extending out to 21 feet on each side of the satellite. The controls of OAO 2 are designed to aim the satellite within one minute of an arc (1/300 of the distance between the pointers of the Big Dipper). NASA points out, "This is equivalent to zeroing in on the eye of a man 750 feet away and holding the observing instrument steady for as long as an hour while the brightness of the eye is being minutely observed."

The Smithsonian Celescope is a group of four 12½-inch high-resolution telescopes designed for locating and mapping stars. Each telescope focuses the light from an area of the sky 2.5 degrees in diameter onto the ultraviolet-sensitive television image tube called a "uvicon." This tube converts the picture into digital signals which are transmitted back to Earth.

The Wisconsin instrument package includes four 8-inch stellar photometers backed up by two scanning spectrometers and a 16-inch-diameter nebular photometer, capable of measuring the spectral intensity of star clouds. This experiment is NASA's first major attempt to measure stars and nebulae with a photometer aboard a satellite. As far as is known, it is also the world's first experiment of this type.

Like most satellites, OAO 2 began sending back a flood of information soon after it went into orbit. In their book, "History of Rocketry and Space Travel," Wernher Von Braun and Frederick I. Ordway III report, "During its first month of operation, [OAO 2] gathered a total of sixty-five hours of astronomical data, including twenty times more information about ultraviolet characteristics of stars than had been obtained during fifteen years with sounding rockets."

The first task performed by OAO 2 was a location and mapping of stars by ultraviolet light. Once this was completed the astronomers turned to studies of particularly interesting objects. They have found that some galaxies are brighter than expected, some hot stars burn hotter, and some cool stars are cooler than expected.

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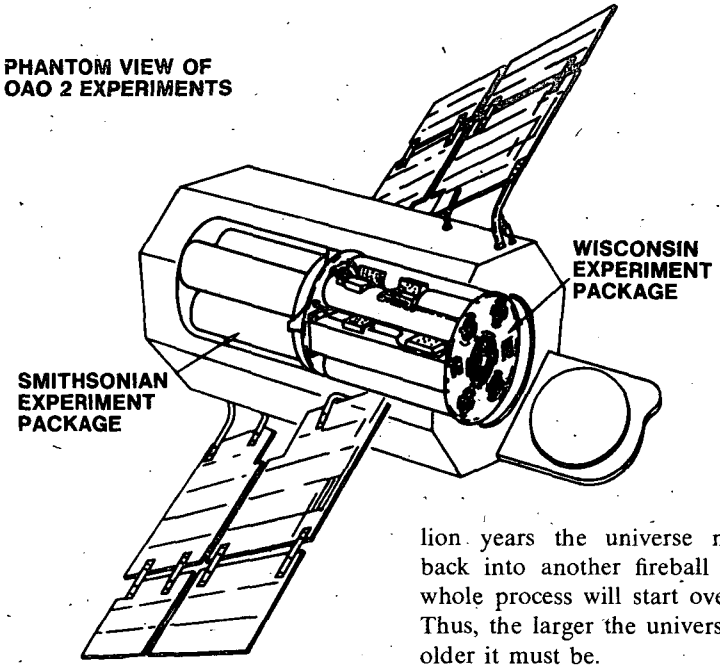

Because of their bright ultraviolet light, some distant galaxies must be quite brilliant objects. Yet they appear rather faint in visible light, which means that these galaxies must be quite a distance away, possibly much farther than previously expected.

According to the "Big Bang" or "Expanding-Contracting" theory of the origin of the universe this would mean that the universe is much older than previously calculated. According to this theory, about ten billion years ago a giant fireball exploded in the center of what is now the universe.

The debris of this explosion, the stars and galaxies, are still flying outward. In about a hundred billion years the universe may fall back into another fireball and the whole process will start over again. Thus, the larger the universe is, the older it must be.

Besides the stars and galaxies, this theory also suggests that there is a considerable amount of unobserved matter in the universe. OAO 2, however, found that if this matter does exist it doesn't radiate ultraviolet light. This could mean that the universe is not a closed system as predicted by the Big Bang theory and Einstein's Theory of General Relativity.

Instead, the universe may fit the "Steady State" theory, which says that new matter is continuously being created, always has been, and always will be. According to this theory the universe is expanding because new matter (hydrogen) is continually being created and pushing aside the old.

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Some more light will be shed on the origin of the universe by the Small Astronomical Satellite (SAS), which is to study cosmic rays. If these rays come from the edge of the universe it will support the Big Bang theory.

On a somewhat smaller scale, OAO 2 studied the behavior and evolution of stars. It confirmed earlier evidence that hot stars throw off into space the equivalent of the Earth's mass every year. In only a hundred thousand years, a short period to astronomers, these stars will lose as much as the total mass of our sun.

The Celescope showed that older stars appear fainter in ultraviolet than younger ones, which appear similar in blue light. The dust clouds, in which stars are believed to take shape, were found to radiate ultraviolet light as well as reflecting it from the embryo stars forming within them.

The Smithsonian experiment also mapped the locations of at least seventeen thousand stars. Most of these were hot normal stars, and a few were abnormal stars which had been expected to be brilliant in the ultraviolet. Astrophysicists, however, are most interested in the numerous cooler and fainter stars observed. They are now checking them with catalogs of ground-based observations.

In spite of the OAO 2's altitude, the atmosphere still got in the way. One of the Celescope's four spectral ranges was partly blocked by hydrogen in the upper atmosphere, with only the brighter stars shining through the glare. Evidence of the hydrogen on the fringes of the atmosphere was also reported by the Wisconsin experiment.

Although the discovery of the hydrogen was a hindrance to astronomers, it was a help to geophysicists. It showed that there was much more hydrogen on the edge of Earth's atmosphere than previously suspected.

The Van Allen radiation belts also interfered with the Wisconsin experiments. Whenever a solar flare swept past Earth, more radiation was trapped in the belts. This complicated the measurement of the fainter objects in the sky. Once again, what was a hindrance to astronomers benefited geophysicists with more information about Earth.

Some information about Earth was gathered deliberately. An old technique, used frequently to measure the atmospheres of other planets, was applied to Earth. The light from setting stars was measured as it passed through air of ever-increasing thickness. This proved to be a more accurate means of revealing the conditions of Earth's upper atmosphere than any method tried from the ground.

The other members of the Solar System were also studied by OAO 2. In the higher frequencies of ultraviolet measured by the Celescope, the Moon appears almost

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black. It reflects only 0.2 percent of these short-wavelength rays compared to 7 percent of the visible light striking it. This is not too surprising, since many materials absorb ultraviolet.

Somewhat more ultraviolet light was detected from the other planets. The brightness and spectra of all the planets were measured with the Wisconsin experiments. Jupiter, Mars, and Saturn produced reasonably good results, but less detailed spectra were obtained from Venus and Uranus, and none was obtained from Pluto.

One possible reason for OAO 2's difficulty in obtaining a spectrum of Venus is shown in the results obtained by observatories on Earth. There ultraviolet photographs show light and dark patches scudding across the planet at several hundred miles per hour—none of which show up in visible light. The Wisconsin experiment lacked the resolution to show these patches.

One way the patches may be caused is by billowy clouds, with more sunlight being reflected by the larger amounts of air over the lower clouds. Another possibility is a thin layer of ultraviolet-absorbing clouds in Venus' upper atmosphere. Such a layer could be carbon suboxide particles created from large amounts of carbon dioxide and carbon monoxide in the Venusian atmosphere by solar radiation.

In the case of Mars, OAO 2 backstopped the Mariner 6 and 7 probes. When the two Mariner probes flew by Mars on July 30 and August 4, 1969, they detected some ozone in the Martian atmosphere. This finding was confirmed by OAO 2.

What is believed by many astronomers to be light reflected from billions of tiny interplanetary dust particles was also studied by OAO 2. This is what is known as zodiacal light, and also gegenschein. To the unaided eye it appears as a faint glow along the ecliptic. It is best seen on moonless nights when there are no bright stars, planets, or man-made lights to interfere.

By contrast the zodiacal light appeared much brighter in ultraviolet to OAO 2 than expected. This might indicate that the space in the Solar System is dustier than scientists had thought. Still the particles are quite far apart. It has been calculated that one meteor a millimeter wide every five miles would be enough to reflect the zodiacal light seen from Earth.

Evidence against one theory about the gegenschein has been produced by OAO 2. The Russian astronomer Fessenkov has suggested that the pressure of sunlight could push away the upper edges of Earth's atmosphere, as it does the tail of a comet. If this were true the Celescope experiment would have encountered more interference from high altitude hydrogen at night than in the day. No such difficulty has been reported.

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In spite of all the work the OAO 2 has done, it has just begun to gather a few glimmers of the knowledge of astronomy to be obtained from space. NASA's Astronomy Board is therefore planning to continue the OAO's investigations, particularly its studies of the planets.

NASA has also contracted with Grumman Aircraft for a big brother of the OAO, called the Large Space Telescope, to be launched by a Saturn IB in the 1980's. This spacecraft will weigh about 20,000 pounds and will be 50 feet long and 15 feet in diameter. It should be able to operate in a 300-mile-high orbit for five to eight years. However, NASA could decide on a higher orbit because of OAO 2's difficulty with hydrogen on the fringes of Earth's atmosphere.

The heart of this satellite will be a 120-inch telescope. It will be aimed by controls planned with a pointing accuracy of .01 to .003 seconds of an arc—about 6,000 times as accurate as the OAO. As Dick Dunne, a Grumman spokesman, says, "This is equivalent to observing the indentations on a golf ball from a distance of 217,000 miles, almost the distance from Earth to the Moon."

The Large Space Telescope will eliminate two of the problems of the OAO. Obviously, the telescope is bigger than most of those at observatories on Earth. Being in space should make its light-gathering power even greater than a similar one beneath the atmosphere. Also, by 1980 NASA hopes to develop the capability for manned spacecraft to rendezvous with unmanned satellites and repair them.

Like its little brother, the OAO, the Large Space Telescope will continue to prove that sending observatories beyond the blue is not a waste of money that could better be spent on Earth. In fact, the Astronomy Missions Board believes space astronomy will "result in a vast accumulation of new and fundamental scientific knowledge." Already the results of the OAO program indicate that they may very well be right. ■

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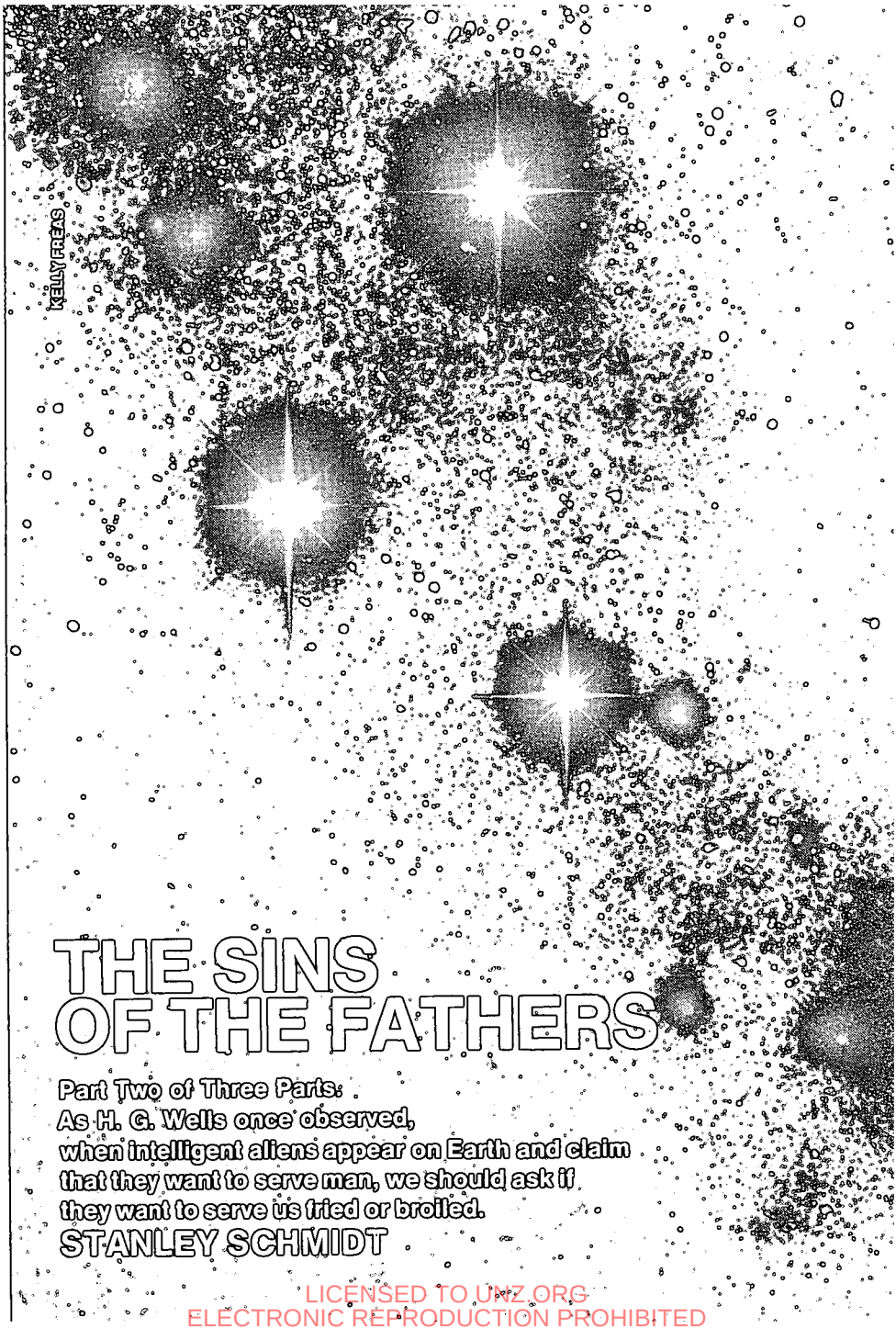

THE SINS OF THE FATHERS

Part Two of Three Parts:

As H. G. Wells once observed, when intelligent aliens appear on Earth and claim that they want to serve man, we should ask if they want to serve us fried or broiled.

STANLEY SCHMIDT

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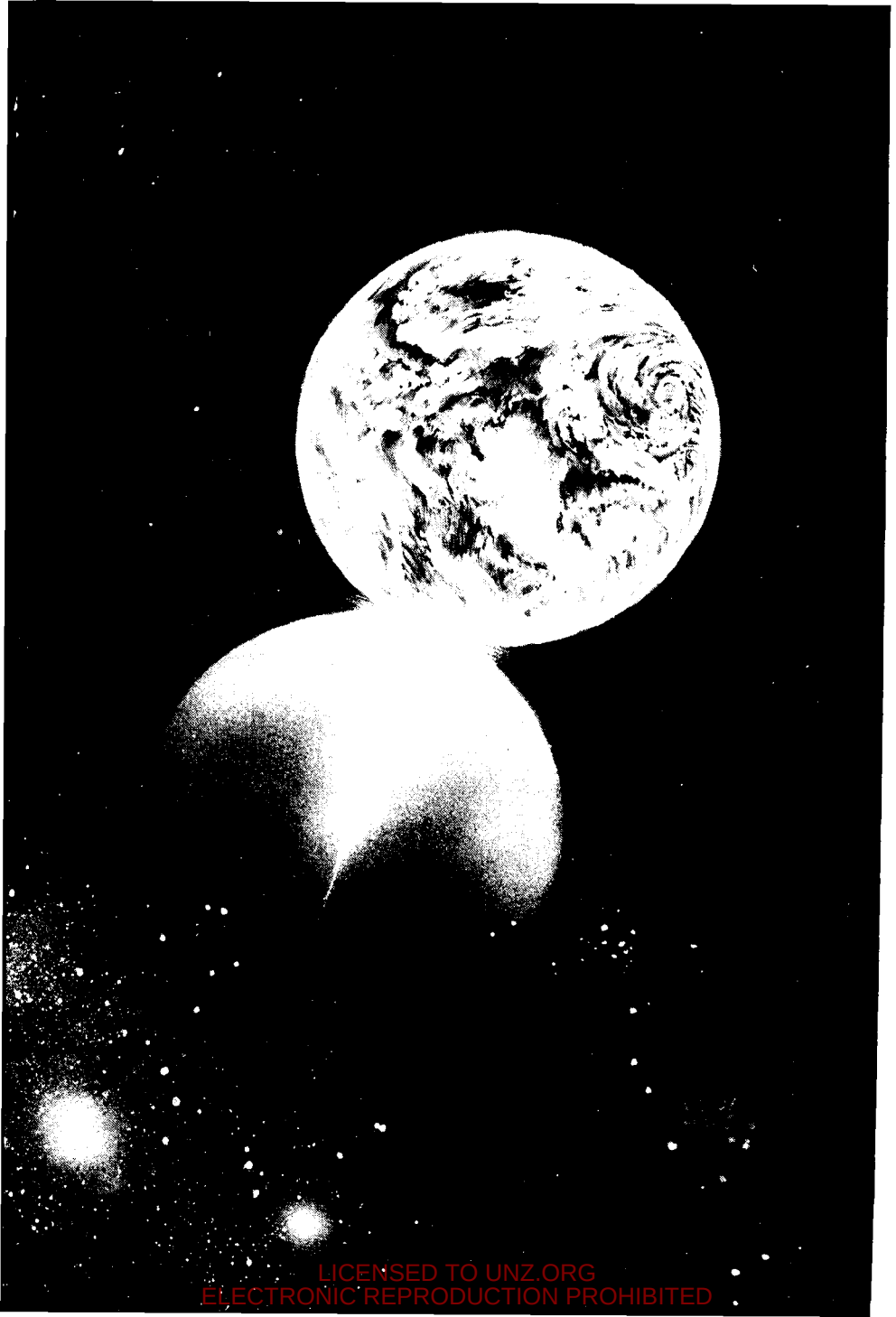

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SYNOPSIS

The accidental discovery of a faster-than-light drive by CHANDRAGUPTA RAO *and* CHANG PEI-FU *near the end of the Twentieth Century has opened the way to interstellar exploration at a time when development of the Solar System is only well begun. In the early Twenty-first Century, a few Rao-Chang ships are sent out to seek colony sites among nearby stars, and one, the* Archaeopteryx, *is sent a hundred and thirty light-years out on a pure-research mission.* DONALD LEWISTON, *the astronomer who persuaded the World Science Foundation to support the expedition, hopes to overtake light from the supernova S Andromedae and perform observations which were not possible when the light passed Earth in 1885. He is accompanied by* DIRK BOROWSKI, *pilot and captain, and* JONEL TURABIAN, *a young man with both astrophysical and pilot's training who doubles as ship's mate and astronomer's assistant. Lewiston's observations are successful, but when the ship returns to Earth, two weeks overdue, he is insane and Borowski has been murdered.*

The ship is met at Kennedy Spaceport in Florida by HENRY CLARK, *Lieutenant Commissioner of Grants for the WSF, who was influential in getting the* Archaeopteryx *funded. Turabian tells him that Lewiston went berserk, possibly because of the psychological effects of super-c travel, and killed Borowski. He leaves the spaceport, saying he needs contact with Earth to reinforce his own sanity, and Clark summons* JOE SANCHEZ, *the Foundation's chief counselor.*

Sanchez is appalled that Clark let Turabian wander off the base, suggesting that Turabian's story may not be entirely true and that Clark may lack some of the qualifications for effective use of power. Meanwhile Turabian conducts some investigations of his own, and when he is called back to the spaceport he admits that he has not told the whole truth. The Archaeopteryx*'s mission took it closer to the center of the galaxy—and its instruments showed that the galactic core has suffered a large-scale explosion. The radiation will begin reaching Earth in twenty years or less, and Turabian's independent investigations have convinced him that it will make Earth's surface uninhabitable. But it need not mean extermination. It may be possible for some people to survive either by hiding underground or by fleeing, using Rao-Chang ships at unprecedented speeds to reach a neighboring galaxy such as M31 in Andromeda. Clark finds both solutions unsatisfying, and suggests that Turabian go off on his own for a few days while they all try to think of a better solution.*

Turabian goes to visit his fiancée, SANDY DUNBAR, *in the mountains of eastern Tennessee. He tells her what has happened, and is relieved that she is willing to flee to M31 with him if the opportunity arises. She*

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wonders whether there may be some significance in Lewiston's having had hallucinations about being followed in the period when he killed Borowski.

Henry Clark, though pessimistic, visits Chandragupta Rao to get his opinion on the feasibility of intergalactic escape such as Turabian suggested. Rao confirms his suspicion that it cannot help more than a very small number of people—and Rao himself has little interest in even that.

Clark leaves the interview deeply discouraged—and is informed by Sanchez that extraterrestrials have appeared near Earth, made radio contact, and are sending representatives to Kennedy Spaceport to talk to Clark. Clark, surprised and confused, awaits their arrival with Sanchez—and Rao, hastily and somewhat reluctantly summoned as a technical consultant.

The aliens, called "Kyyra," arrive in a small shuttle seemingly intended to be inconspicuous. There are three of them, all of imposing appearance to human eyes, led by a spokesman named BELDAN. *Beldan explains that they saw the* Archaeopteryx *in space and followed it home. The Kyyra formerly lived near the galactic core and are already fleeing the explosion, having converted their home planets to faster-than-light ships using the Rao-Chang principle. They offer to help the inhabitants of Earth escape in the same way—by bodily moving the Earth to M31. Clark is intrigued by the offer, but wonders what price they will ask in return. However, he decides it would be better not to ask at this time.*

That night, while trying to decide whether to notify United Nations head FRANZ GERBER *of the recent events, Clark is visited in his apartment by Rao. Rao is suspicious of the Kyyra offer, both because he wonders whether they can be trusted and because he suspects something sinister in their motives for the offer. Clark doesn't see the reason for the latter until Rao reminds him of the energy and time-dilation characteristics of the Rao-Chang drive. If Beldan's story is true, it seems inescapable that the Kyyra have been traveling very slightly above the speed of light. Such a speed seems to offer no advantages at all over traveling much faster—but it involves a huge amount of additional expense and trouble.*

So the obvious and very puzzling question is, Why are they doing it that way?

Part 2

VIII

Word leaked, of course.

Sometime during the hours of tossing and turning and staring into the darkness, Clark decided that he needed rest more than anything else, and switched off the alarm clock. When sleep finally came, it was fitful at first but then he sank deeper and deeper. When the phone finally woke him, it dragged

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him up from the depths as if through miles of thick syrup, until at last he found himself staring at the ceiling and observing dimly that it was light and the phone was ringing.

The fact eventually penetrated enough to make him reach out for the phone, more annoyed than curious or apprehensive. He managed to pick up the receiver and tuck it under his chin, propping himself up on one elbow. "Hullo?"

"Henry Clark," a painfully loud voice snapped crisply. "Is that you?"

"Yeah," Clark muttered. "Who—"

"Gerber here," said the voice. "Franz Gerber. You may remember me."

Gerber's voice dripped sarcasm. Clark worked diligently to finish waking his mind, but annoyance was still his dominant feeling. "I remember," he said. "What's up?"

"Funny that *you* should ask that. What's all this rubbish in the morning papers—and why wasn't I notified?"

Clark sat up abruptly on the edge of the bed, suddenly more attentive. "What rubbish in the morning papers? I haven't seen them yet."

"Haven't seen them? Good heavens, Clark, what are you doing? Sleeping your days away while the rest of us try to keep the world reasonably intact?"

Clark's reaction surprised him. "Knock it off, Franz," he interrupted. "I'm in no mood for personal vitriol. Come to the point."

A brief pause; Gerber was probably equally surprised. Then he said, very businesslike, "I have three papers in front of me. Each of them carries at least one article on the front page. Not top headline stuff, but front page. Is it true that some sort of extraterrestrial creatures have landed at Kennedy Spaceport?"

"What?"

"You heard me. Do you have aliens there? Or have the wire services gone in for monster fiction?"

"What do they say?"

"Hm-m-m," the UN head observed darkly, "you're hedging. The articles I refer to mention the obvious facts that you are there and the port has been shut down more thoroughly than it has ever been shut down before. Naturally speculation about that is rampant. Coincidentally, there's been an unusual rash of UFO reports from that area. At least a dozen in the Titusville-Merritt Island area, all at about the same time yesterday afternoon. Any good newshound would start thinking out loud about a connection, and several already have."

Clark was surprised; the Kyyra ship had blended superbly with the sky. How had so many people seen it—or had they seen something else instead? He wondered silently whether there had been any public

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word about the shuttle sent out to investigate the orbiting object which he now knew as a Kyyra convoy ship. He asked, "What did these UFO's supposedly look like?"

"The reports were remarkably consistent. The observers all said they saw a single object, high, fast, probably round, and sky-blue. They only happened to notice it when it passed in front of a white cloud. If there'd been more clouds, we might have had more sightings. *Nicht wahr?*"

For one final moment, Clark toyed with the idea of still trying to cover up. Then he decided that was pointless and the time was too late. He would throw the unembellished truth directly in Gerber's face and play it by ear from there, letting the UN man react however he wanted to. *"Wahr,"* he announced almost belligerently. "Yes, Franz. We have aliens here."

There was a long silence, except for slow breathing. Finally Gerber said tightly, "Why wasn't I informed?"

Clark shrugged; without video, the effect was lost. "They've been here less than a day."

"But you knew they were coming long enough to get down there to meet them."

"A few more hours."

Another long silence. Clark could easily visualize Gerber's round, ruddy, boyish face growing steadily tighter and redder with exasperation. There was a faint hiss of breath being drawn in sharply, and Gerber spat out, "Quit playing games! What do they want?"

"We're not sure. We've only talked to them once."

"And you have no idea what they're doing here?"

"I didn't say that. Look, if you really want to know what little I know, you'd better relax and settle back and listen for a few minutes. Can you keep a secret?"

"What kind of a question is *that?*" Gerber didn't dignify it with an answer. His anger showed no sign of abating.

"Serious," said Clark. "I'll assume the answer is yes; it had better be. We had a faster-than-light research ship out and it got a look at the core of our galaxy by light that won't reach us for a while. It's exploded. The radiation will begin arriving in about seventeen years."

"Hmph," Gerber snorted. "What's all that have to do with the aliens? Or are you trying to lead me off the subject?"

"That radiation's going to be dangerous when it gets here. It's probably already wiped out life on millions of planets in the galaxy, and it's not going to overlook any of the others. Earth is in danger."

"You're being unnecessarily melodramatic," Gerber said brusquely. "It ill becomes one in a position of such responsibility. What about the aliens?"

Clark took time to reflect that it

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did sound melodramatic. It sounded more like something that happened in low-budget horror films than in reality . . .

But it wasn't a low-budget horror film. It was something that astronomers had known about for years, suddenly brought closer to home. All Earth really was in danger, and it would be purest folly to dismiss that fact lightly because it sounded melodramatic.

"Earth is in danger," he repeated quietly. "The Kyyra have offered to help us escape."

"Bah! You really expect me to swallow this rubbish?"

Clark managed to put a shrug into his voice. "I don't especially care. Reality has a way of forcing itself on you, whether you want to recognize it or not."

Gerber snorted again. He started to say something but bit it off before it had gone far enough to be recognizable. "I'll buy your aliens," he said. "But the rest of the story? Well . . . suppose I buy that too. You say they want to help us. How, pray tell?"

"By converting the Earth to a spaceship and moving it to another galaxy."

"I see." Gerber's voice had become patronizing now, and faintly amused. "Faster than light, of course?"

"Of course." Clark couldn't resist adding, "It's the only way to fly."

"Hmph. And what do they want in return?"

"That," said Clark, "we don't know yet."

"But you're planning to dump a big decision on me, huh? You're going to expect the UN to decide whether to accept their offer or not. Eh?"

"I imagine it'll wind up there eventually." Clark felt stirrings of the old hope of getting out from under the responsibility, but they were weaker now. Gerber wasn't inspiring much confidence in his ability to handle such a matter this morning.

"The last word belongs to us, all right," Gerber said ominously. "And you'd better not forget that. Frankly, I still can't decide whether you're on the level or this is some screwy hoax. But if it's real, I'm going to pass the buck right back to you—*until* the last word."

Clark stiffened. "What do you mean?"

"You're already in this thing. You've made a start on it, and a lot of the things we'll need to know before we make a decision are scientific. *Nicht wahr?* So I'm not even getting into it yet. Except to tell you to learn everything you can to advise us on a final decision. If the time comes that I actually have to make a move like that, I'm expecting you to make a strong recommendation, with lots of hard facts to back it up. And while you're gathering them, I'll expect interim reports so I won't have to try to assimilate it all at

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the last minute. Understand?"

"Yes, but—"

"And one more thing."

Clark broke off. "Yes?"

Gerber paused dramatically before answering. Then he said, very deliberately, "This had better be good."

He hung up without waiting for anything else.

Clark sat there, staring at the phone, for quite a while after he hung up. It had not gone as he had expected. Even in the face of Gerber's attitude, there had been that thing in his mind which hoped the conversation would shift the burden of responsibility from his shoulders to Gerber's. It hadn't; instead it had settled the load more solidly than ever where it was. Gerber would not even admit that the things Clark spoke of were real—but if they were, it was Clark who would have to think them through to a decision. It was Clark who would have to bear the constant pressure of knowing that on that decision rode, quite literally, the fate of an entire planetful of people.

And all the while knowing that, no matter how much he tortured himself to arrive at the best possible decision, it could be swiftly and completely overruled by a sudden whim of Gerber's group.

Again he resented it. He felt overwhelmed. But at the same time, a part of him that was slowly beginning to grow stronger quietly resolved to make the best of it.

At the moment, caution prevailed. It was already late morning when Gerber called; it was midafternoon before Clark rounded up the Kyyra delegation and the other humans for another meeting. And then it was a singularly fruitless meeting.

Clark recalled afterward that both Rao and Sanchez showed signs of impatience during it, but they also showed restraint. As he had requested, they avoided initiating lines of questioning, leaving that to his diplomatic judgment. He asked few questions himself. There were many in his mind, but somehow the appropriate moment to ask them never seemed to arise. Or at least, so it seemed to him in his present state of mind, colored by an exaggerated consciousness of his responsibility. And Beldan volunteered little except occasional eerie pipings. Clark was becoming increasingly conscious of a peculiar, vaguely unsettling reticence about the entire Kyyra delegation, but he had no way of knowing what—if anything—it meant.

A slightly clearer picture of how the Kyyra proposed to move the Earth emerged from the meeting. But only slightly, and Clark, thinking back, could remember very little of substance that was said before its early adjournment.

The question of motives had not even been approached.

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Back in his apartment that evening, he lay on the couch mentally reviewing his performance at the meeting and fiercely criticizing his own timidity in it. Tomorrow, he resolved, would be different.

Somewhere around dusk he was snapped out of his reverie by the phone. "Guardsman Miller at the Main Gate, sir," said the caller. "There's a man here who claims he's Jonel Turabian and needs to see you, sir. His credentials seem to be in order. He has a woman with him. And a dog."

Clark frowned slightly, then said, "Let me see them." He flicked on the small screen in the base of the phone. A second later, a clear picture snapped into being, showing the guardsman, Jonel, and Sandy Dunbar, holding a picturesque mongrel who looked as if he would like to get at the guardsman.

Clark said, "What's up, Jonel?"

"I need to see you personally," Jonel said. "You'll want us to stay."

Clark thought very briefly. Then he said, "Guardsman, escort these people in here and give them quarters. My authority."

"Yes, sir. The dog, too?"

"The dog too." He switched off the screen and hung up.

A half hour later there was a knock and Clark went to let Jonel and Sandy in. He was surprisingly glad to see them.

And he was more than surprised when Jonel said, "Hi! We've come to meet your aliens. Lewiston warned us to expect them—and I thought he was hallucinating."

IX

Jonel's strange opening remark gave Clark the impetus he needed to go into the next afternoon's meeting with a firm battle plan—a series of questions that *must* be asked and which he *would* ask before he allowed adjournment. He even went so far as to jot them down on an index card. And he spent an hour in the morning with Rao, working out the wording of some of them.

Beldan, he thought without being able to put a finger on why, seemed surprised and uneasy when the human party filed into the conference room this time—with two new members. There had been no question about admitting Jonel, of course. Clark had balked slightly at letting Sandy in, but Jonel had thought it was a good idea and Clark had not been able to think of a good reason to deny the request. And Sandy herself could be pretty persuasive at times.

They all settled into their chairs. Beldan still managed somehow to look withdrawn and uncomfortable, though Clark did not yet feel any confidence about reading Kyyra faces. There were introductions. Sandy smiled ingratiatingly and then continued to watch the Kyyra with frank interest; Jonel watched too, but with a deliberate effort to

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avoid being obvious about it.

"I have a question," Clark told Beldan when they were through the formalities. "Mr. Turabian was aboard the *Archaeopteryx*. There was another person aboard who he formerly thought was suffering hallucinations, but now suspects may have been aware that you were following the ship. Is that possible?"

Beldan nodded slightly. "Yes," he said quietly. "You refer to the astronomer. Please accept our regrets for what happened."

Clark frowned abruptly, startled by the unexpected reference to Lewiston's profession. "Exactly what did happen?" he asked sharply.

"Large objects in super-c are very conspicuous to an observer who is also in super-c," said Beldan. "That is how we first detected your ship. To learn more of its nature and origin, we had to use other methods." He hesitated, as if searching for words. "Your language is ill-equipped to tell you about them. You seem to have a few words which approach the fringes of the concepts, but they are incomplete, confused—and not even fully or universally accepted in your culture." Clark felt a touch of fear. Just how much had these beings been able to learn from radio and television broadcasts? "There is a class of phenomena which are associated with minds and follow different laws from the ones you call 'physical'. But they do follow laws, and an understanding of those laws provided the basis of our normal means of communication while in super-c. You don't seem to have a word for that means of communication."

We don't have the means, either, Clark thought tightly, his fear flaring up. He said, "You mean the Kyyra are telepathic?"

"No. Not in the sense that you use that word, though it is one of the words I mentioned that approach the subject. We have not cultivated direct mind-to-mind contact among individuals. Normally we use transmitters and receivers, controlled by speech or similar means. We tried contacting the *Archaeopteryx* that way but got no response. So we used a sensor beam which is a modification of the same principle. It is vaguely analogous to your radar, being sent out and returned in modified form by the activities of minds that it encounters. There is no travel time involved, so it can be used in either super-c or sub-c to gain information from a mind not equipped with a transmitter. Less reliable than good two-way communications equipment, but an acceptable emergency substitute."

"And that's what you used on Lewiston?"

Beldan nodded. "And Turabian, and the other one. And later you, Mr. Clark. You seem offended; I fear I don't understand exactly why. This was our only way to

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learn enough about you to come here and begin these discussions of our common danger. That was our only purpose. It was unfortunate that Lewiston's mind was one of those that are unusually sensitive to the sensor beam. While his two shipmates were at most dimly aware of it, Lewiston at times felt it very strongly and even gained some awareness of what it was and who was behind it. But since such phenomena as telepathy are so sporadic in your species, and the underlying principles not even suspected, he himself tended to regard those moments of heightened awareness as mere hallucinations. Most unfortunate; we are sorry. We learned from such cases as his, and as soon as we were able we restricted our communications with you to your own electromagnetic methods."

Clark relaxed slightly. If the Kyyra weren't reading all his thoughts right now, things weren't as bad as he had thought. Still, he had been read in the past . . . "I'm surprised our minds are similar enough for you to study that way" he remarked.

"The basic laws are general," said Beldan. "We have little experience with life forms other than ourselves, but we find a sameness in the effects of human and Kyyra minds on the sensor beam which far transcends the superficial differences in spoken language or even neural circuitry."

Clark whistled. "Wow," he said softly. "What a weapon this must be. When you were home, I suppose you used it a lot in war?"

"What is war?" Beldan asked.

Such a response had never even occurred to Clark. When he recovered from the first shock of it, he said, "Never mind. It would take too long to explain, and it has nothing to do with us." *(I hope,* he thought involuntarily.) "If you don't know what it is, you're lucky." He changed the subject, but the oddity of the question lingered in his mind. "There's a question that's been bothering several of us, and we think things will go more smoothly if we clear it up now. If I ask it badly, please believe no offense is intended."

"What is it?"

"You've offered to help us escape our galaxy. What we wonder is, why?"

Beldan's eyes jerked back momentarily and then he unmistakably frowned, as humanly as was possible without a nose. "What difference does that make?" he asked. "You know the danger exists, and we offer you a way out of it. Isn't that enough?"

"Yes, but . . ." Out of the corner of his eye, Clark saw Sandy watching Beldan even more intently than she had been so far—and her eyes had never left him for more than a second or two. Now her expression had become almost as inscrutable

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as his, but Clark could spare no effort to try to figure it out. He said, "Of course we're grateful for the offer. But helping us would be an enormous inconvenience to you—"

"Not as enormous to us as it appears to you."

"I can appreciate that," Clark said, with growing exasperation, "but still enormous. What we get out of it is obvious. But what do you ask in return?"

"Must we ask something in return?"

Rao and Sanchez were staring expectantly at Clark, but he couldn't think of another way to attack the question. As unsatisfied with himself as they were, he said, "I don't seem to be making myself clear. Maybe I should leave that question and come back to it later. There is one more thing, though, along the same general lines. Dr. Rao brought it to my attention that you must have left your home not long after the core explosion began and been traveling at a speed only slightly above c. Is that true?"

Beldan's eyes jerked slightly and he was silent for a few seconds before answering. "Yes."

"Wouldn't it have been a lot easier and less costly to jump to super-c from well below, and then accelerate to a very high speed?"

Another pause. "Perhaps."

"Then why didn't you do it that way?"

"How very inquisitive you are," said Beldan.

The remark instantly struck Clark as sarcastic. "Yes," he said with muffled anger. "We're inquisitive by nature. You'd better get used to it."

"I meant no offense," said Beldan. "I meant only that with your planet in such danger, and with so little time to prepare, it seems odd that you dwell so much on matters that have so little to do with the problem."

So little? Clark thought incredulously. But he calmed himself with an effort and said only, "I see your point. If you prefer to talk about procedures, let's talk about procedures." He drew the index card full of notes out of his shirt pocket and looked at it.

Bēldan had taken his music-pipe out and started a snatch of melody on it. One of the others also took out a pipe and started an independent tune. At first the two pipings seemed chaotically unrelated. Then they seemed to merge for a moment into an indescribable unity, and then slither off in their separate ways, again independent entities but somehow still belonging together. Clark shivered. The stuff they did with those pipes was unearthly, all right, but some of it was powerfully evocative to human ears. He turned to Jonel and Sandy and explained, "They carry those pipes around and play them at the drop of a hat. Seem to use music like we use cigarettes and coffee."

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"I like it," said Sandy.

The remark startled Clark; he would never have thought of making it. Beldan stopped and looked at Sandy. "Thank you," he said. He played a few more notes, put the pipe down on the table in front of him, and looked back at Clark. "You have questions?" The other Kyyra kept on playing his pipe, softly.

"Yes." Clark glanced at his card, then back at Beldan. "You said that when you move a planet, the planet itself provides the fuel. Yesterday you clarified that somewhat by specifying that subsurface and core material are converted into energy for propulsion. How much subsurface and core material?"

"An appreciable fraction," said Beldan. "All of what you call core, and a good deal of what you call subsurface."

And you don't want to give numbers? Clark thought suspiciously. He noticed that Rao was doodling on the tabletop. He started to ask something, but right then Rao whipped out a pocket calculator, punched a set of buttons, and looked up. "Excuse me," he said.

Clark glanced at him, hoping he would watch what he said. "You spoke yesterday," said Rao, "of running the Earth up to what we consider a typical speed before the transition to super-c, and then accelerating beyond the barrier to keep trip time down to a small number of years. Any mechanism I can envision short of essentially complete conversion has no possibility of doing that. So you propose injecting large quantities of antimatter?" To human ears, his sarcasm was obvious. Clark found it hard to tell, at such moments, whether Rao was showing an admirable willingness to acknowledge his ignorance, or an eagerness to flaunt knowledge that he thought was greater than it was.

Beldan gave a matter-of-fact answer. "It is not necessary to inject anything from outside. It is far easier to use what is already here. We can initiate a controlled process of complete conversion by a process which induces a transition— Forgive me; your broadcast media have not provided me with a good basis for discussing technical matters in terms familiar to you. The best I can do is to say that our 'induced annihilation' process effectively converts *some* of the atoms in a sample to corresponding atoms of antimatter. I can see your skepticism, Dr. Rao, but be assured that it is a perfectly normal . . . quantum transition, even though you have not recognized the appropriate quantum numbers. And we would only use that process at the beginning of the trip. Reaction engines are intrinsically inefficient, even at their best. Once under way, it becomes possible to use another process—one which I fear is even less familiar to you. It converts a portion of the mass of the Earth

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directly and completely into kinetic energy of the remaining unconverted part, without wasting most of the energy on an exhaust."

Rao stared at him silently for a long time, disbelief written plainly on his face. Clark could easily understand that disbelief, but he was not yet willing to share it absolutely. Rao punched out something else on his pocket calculator, stared at it, punched again, and shrugged. "And the transition to super-c is achieved by large induction stations built at several points on Earth's surface?"

"Correct. And some or all of that construction can be done after the trip begins, during the sub-c acceleration."

Clark felt a growing, deep-seated discomfort as he began to see some of the ramifications of the Kyyra proposal. If it was accepted, Earth would be changed irrevocably and beyond recognition. A powerful tug-of-war was beginning to grow in his mind and feelings. On one hand, there was the desire to do whatever was needed to save Earth and man in whatever form could be managed; on the other, the desire to save them in their present form for as long as possible—even if only seventeen years. On one hand was the urge toward personal escape; on the other, the intellectual realization that his personal life-span might not extend beyond those seventeen years anyway.

"There's a very simple question," he said, trying to keep his mind focused on one thing at a time. "You say you start out with a reaction engine. Where do you put the nozzle? If you don't know what war is, you can't imagine the trouble that question will cause."

"I believe I can see some of the trouble you anticipate," said Beldan. "Fortunately the best place to start the reaction is relatively uninhabited. A nozzle at your South Pole would have the advantage of thrusting along the axis, and M31 is located roughly north. Once the reaction is under way and has penetrated deeply enough, we can make course corrections by modifying the shape of the reaction zone."

"But running it at the South Pole, one of the first effects would be to melt the South Polar cap. What about all the flooding?"

"A definite inconvenience," Beldan said simply. "But not by any means the last or largest you'll face. I will not try to hide the hardships from you. Others come to mind immediately. As the Earth accelerates and uses up its mass, its surface gravity will decrease—rather drastically. That will have physiological effects on all who are not protected by artificial gravity fields. It will also lead to partial loss of atmosphere. That in turn will be aggravated by the changed thermal properties. We can adjust the heat released internally by the driving

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reactions to maintain the surface region at a tolerable temperature in interstellar space, but the accustomed structure of your atmosphere and oceans is dependent on the main heat input coming from an external point source. All that will change."

Clark nodded numbly as Beldan confirmed a whole string of his worries. He had subconsciously half-hoped that the Omnipotent Benefactors could do their good deed without all those unpleasant side effects. But of course they *weren't* omnipotent. They worked within the strict framework of physical laws, even if those laws were far more inclusive than the ones man knew—or had thought he knew two decades earlier. "So it seems," Clark said slowly, "that the surface will become unfit for life during the trip and we will have to move underground."

"So it seems. But it is not as bad as it sounds. Some of the modifications are needed only for later stages of the trip and can be done en route. For the beginning, you already have some places that are good enough, in your cities which have grown downward in recent years."

That was true. Underground expansion had become big business lately, and some of the underground parts of places like New York would be able to protect travelers and atmosphere with little modification. "But only a few," Clark protested. "What about all the others?"

"Many homes could be modified rather easily. The occupants could do it themselves, before starting or in the earliest phases of the trip."

"But that's expensive. What about all the people who can't afford it?"

Beldan shrugged—a shrug too obviously learned from Rao. "A huge quantity of detail work," he said, "but you'll find a way to do it if you want it badly enough. We'll provide propulsion and basic guidance in the whole program, but the rest of the details you'll have to take care of yourselves."

The hope the Kyyra had brought was becoming far too tainted with other things. In a voice bordering on despair, Clark asked bitterly, "So to accept your offer we have to go underground and give up all that means Earth to us. How is that better than just going underground and hiding right where we are?"

Beldan stared at him for a long time, apparently surprised, before he answered. "Do you really have to ask that? The answer is simple enough. At the other end will be new planets—and in far less than the million years that the danger will last here."

The end of the session found Clark mentally and emotionally exhausted. He was relieved when Beldan agreed to a day's recess to allow time for thought. A guardsman

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came to escort the Kyyra back to their quarters; Jonel and Sandy followed them out without saying anything. But Rao and Sanchez remained, and as soon as the others were gone they both turned on Clark with fire in their eyes. "I trust," Rao said venomously, "you do not think you have cleared up the questions of motives and travel time to anybody's satisfaction except your own."

"Second the motion," Sanchez drawled, frowning as he lit up a cigar. "Sounds to me like I'm still supposed to believe they just want to do this out of the goodness of their hearts. And I don't."

"Knock it off," Clark said. "I know nothing's settled, to my satisfaction any more than yours. But I didn't see any good way to keep pursuing the questions today. I had the impression, watching Beldan's reactions, that there was a difference in cultural orientation getting in the way. As when he said we were wasting time on unimportant questions. It's hard for us to see it that way, but I think maybe he really *believed* they were unimportant."

"Then why wouldn't he answer?"

"I won't know that until I understand better how they think. That'll take time. Meanwhile, I freely admit I got nowhere on the motive question. But I did think of a possible reason for the way they've been traveling."

Rao's thick black eyebrows jerked suspiciously upward. "Yes?"

"Maybe they wanted to look for people like us who needed help. And they wanted to have time to make contact when they found any."

Rao laughed, a single contemptuous blast. "Really, Mr. Clark, really! That brings you right back to the motive question. With a galactic explosion breathing down their necks, why should they wish to dawdle along looking for backward races to help? Above all, why should they be so eager to help that they would go to literally tremendous expense looking for such races?"

"Actually," Sanchez mused, "how do we know they're really from anywhere near the core? How do we know they're not from right around where the *Archaeopteryx* went? Maybe they saw it and got scared and this whole business is an elaborate scheme to get a chance to destroy Earth. And us."

"Yesterday," Clark said wearily, "I was accused of being unnecessarily melodramatic. Were you really listening to what you just said, Joe? Think about it. Why should they want to destroy Earth? And if they did, and they really have the capability to do it, why should they go through all this silliness of meeting us face to face and asking permission?"

Sanchez uttered something between a grunt and a snort, but otherwise said nothing. Clark was

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somewhat relieved; though his questions were good ones, already he was seeing equally good counterquestions for which he had no ready answers. And he could think of no really *positive* way to answer the questions Sanchez had already asked.

"We seem," Rao said after an awkward pause, "to be at a stalemate on those questions. However, I would remind you again, Mr. Clark, of the first question I asked you night before last. Can we trust them? Even if they mean well, have you really tried to visualize the measures Beldan has described? He is speaking of spaceship-style living, Mr. Clark, for everybody on Earth for a period of at least a year and possibly many years. Confining quarters; air and water and food supply problems; reduced gravity or dependence on pseudo-grav. And months or years of isolation in super-c; I'm sure you have heard what that is like. Not everybody is suitably constituted for spaceship life, physically or psychologically. There are good reasons why astronauts have always been carefully screened and trained. Most of us are simply not prepared to endure those conditions. *I* am not prepared to endure those conditions."

Clark looked straight at him. "Are you more prepared to die?"

Rao looked straight back without flinching. "Yes, Mr. Clark, I am. I already told you that, when you first came to see me. I have thought of another reason why pseudo-grav will be needed, by the way, even before much mass is lost. Acceleration. Our ideas of up and down are going to become rather strange when the whole planet begins accelerating along its axis. I don't know what sort of accelerations they propose to use, but I did a rather interesting calculation during today's meeting. You might be interested in its result, Mr. Clark. It will help you to appreciate the kind of thing we're discussing. Would you like to hear it?"

"Let's hear it," Clark said indifferently.

"I estimated the rate at which they would have to annihilate matter to produce an initial acceleration of half a G—which, by the way, would mean an acceleration time on the order of a year before the transition. The annihilation rate, if I calculated correctly, is roughly comparable to completely annihilating twenty-five Mt. Everests per second. Try to picture that, Mr. Clark. And then think of how delicately even such a puny thing as a bulldozer refines a landscape."

Clark thought about it; the picture was not pleasing. But he didn't say so. He just said, very quietly, "You know, Dr. Rao, I believe you're scared." And he smiled slightly, meanwhile reflecting that there was nothing unreasonable in Rao's being scared. If the Kyyra really did things like that—and the

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far more spectacular things they had apparently done with their own planet—they were thoroughly awe-inspiring. And the more you knew about science, the more awe-inspiring they were. If Lewiston had got any kind of a good look at what the Kyyra were . . .

No wonder he had cracked up.

Rao's piercing black eyes glowered. "Ridiculous!" he snapped. "I merely want to be sure you do not commit us to anything rash." He paused. "Frankly, I seriously question even the possibility of many of their claims."

"Oh?"

"Yes. Consider their alleged exhaustless drive. A flagrant violation of momentum conservation. And their claim that they can release little enough of the energy as heat to keep the surface at a reasonable temperature. What about the second law of thermodynamics?"

"Maybe," said Clark, his weariness beginning to overcome his patience, "your knowledge isn't quite as general as you think it is."

"I am not *that* ignorant. Those laws are *fundamental.*"

"So were certain interpretations of relativity—until *you* invented the paratachyonic drive." Clark yawned. "All through history people have been sure they've had The Basics, and over and over they've been wrong. They never learn." He paused. "Anything else, Rao?"

Rao glared at him indignantly, breathing hard through clenched teeth. "Just one thing," he muttered finally. "When are you going to tell people about this? Or are you just going to play God?"

He stood up and wheeled to leave in a single swift motion—and almost ran into Beldan, standing with his escort in the open door.

"Excuse me," Beldan said very quietly as he moved aside. "I forgot my pipe." He came in silently, almost apologetically, as Rao stomped out. Clark watched wordlessly as Beldan scooped the pipe off the table, stunned by the realization that the statuesque alien had heard the last exchange.

X

As they left the conference room, Sandy gripped Jonel's hand tightly and walked more hurriedly than was her custom. Jonel glanced at her and saw that her face was tight, her lower lip caught between her teeth. She looked straight ahead and didn't say anything. All the way to the end of the long corridor, Jonel waited. When they entered an elevator, otherwise empty, and Sandy punched for the ground floor, he finally said quietly, "Something's bothering you."

Sandy nodded. "I'm scared," she said simply. "I felt cut off from Earth in there. Can we go . . . out . . . to talk?"

The elevator halted gently and its door slid open silently. They stepped out and headed without

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pause for the outer door nearest the spot where Jonel had parked. He, too, still felt the craving for earthly things he had first experienced when the *Archaeopteryx* had come home, and he had earlier talked Clark into giving permission for them to come and go while the Kyyra meetings were going on. Clark hadn't liked the idea at first, but had given in after reasonably little persuasion. After all, he knew Jonel was trustworthy, and not terribly well known to the public. And no one had yet announced publicly that the *Archaeopteryx* was back, much less linked her return with the UFO reports and the suspicious events at the spaceport . . .

Jonel knew Sandy well; he didn't try to force conversation now. They stepped outside into late afternoon sunshine and crossed a narrow strip of concrete to the parking area. They got into Jonel's compact blue car; Sandy sat close to Jonel but still said nothing as they spun out to the gate and checked past a slightly puzzled but cooperative guardsman.

Jonel took her to that seaside park he had visited the day he got back. *Odd,* he mused as he nosed the car into a parking space, *I've been here dozens of times and I've never even noticed the name of the place. Don't seem to be any conspicuous signs . . .*

It didn't seem important enough to check now, either; it was merely a curiosity he had just consciously noticed for the first time. He and Sandy got out, taking along the blanket he always kept in the back of the car, and walked barefoot down toward the water. The place was even less crowded than usual, probably because of the hour—many people would be at supper now.

They found a place where the beach met the gardens and the sunlight struggled through between the leaves to fall in dappled patterns on the sand. Jonel spread the blanket on the sand there and they lay down on it, parallel to the beach. He waited. Sandy looked at the surf and the vegetation and sifted sand through her fingers, and gradually she seemed to relax—but not completely. Finally Jonel said, "You say you're scared?"

She nodded. "Uh-huh. Aren't you? Listening to Beldan describing the way they can help us . . . I started picturing it. I don't have the background to be sure of all of it, but . . . Jonel, was he making sense?"

"I think so. Anyway, as far as I could tell, he was. Some of it's based on principles we don't know, but the part that's familiar holds water. I don't have any way to check the rest, but there is evidence that they may very well know some principles we don't. And we seem to need some, if we're going to get away."

"Hm-m-m." For several seconds she was silent, thoughtful. Finally

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she said slowly, "But the way he describes it, it's going to be so much trouble. The trip will be hard for everybody and the Earth will never be the same again. Everything—" she gestured around them, "all of this will be ruined. It hurts to think about that." She paused again. "I found myself wondering if it was really worth it. If it might not be better to forget about running that hard. Just resign ourselves to the inevitable and make sure we get all we can out of the years we have left—"

Jonel was startled—this didn't sound like Sandy at all. "What about the kids?" he interrupted. "Could you really bring children into the world knowing they were going to get as far as their teens and then have that happen?"

"There's the hiding thing," she said feebly. "Or . . . maybe we shouldn't have any. Knowing what's going to happen . . ."

"Not have any?" He stared at her in disbelief. "But they were such an important part of our plans. We've both always enjoyed doing so much, and we wanted to share it with them . . ."

"I know. But if it's all going to end . . . as you say, why let them just get as far as their teens and have it all collapse around them?"

"But . . ." Jonel found it hard to think clearly about what to say to her, when the things she was saying were so out of character. "O.K. Suppose we decided to just stay here and wait it out and not have any kids. Do you think for a minute everybody else is going to do the same? No matter what we do, there'll be lots of those youngsters around when the radiation gets here. All in the same boat we tried to make sure ours wouldn't get caught in." He looked at her. "The end won't be quick or easy for any of them."

She was biting her lip rather hard. "I know. There aren't *any* answers I like."

"What happened," Jonel asked, "to what you said when I first told you about this? Before Beldan and his buddies came, you were all set to take off for M31 if we could get space on a ship. All that's changed is that they're saying they can take a lot more people."

"Yes, but . . . I don't know. Maybe it's just that I can't bear doing all that to the Earth. I love the Earth. If we went on a ship I could subconsciously pretend it was still right there where we'd left it. But it wouldn't be, would it?" She shrugged, visibly annoyed with herself. "I don't know *what* I want. I just know I've never been so confused and helpless and—" She broke off and looked at him abruptly, a sharply bordered piece of the uncertainty suddenly gone. "Jonel, what are we waiting for?"

"What?"

"We've known each other long enough and well enough that there hasn't been any question of what

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we planned to do for a long time. Has there?"

"Of course not."

"Well, now the details are all messed up and nothing's certain any more. Except that. Why don't we go ahead and get married *now* and then stick together through whatever happens next?"

"Right away?" Jonel asked, startled.

"Uh-huh." She looked at him expectantly. He looked back, reading her face as carefully as he could. Her suggestion was completely unexpected, but he found himself feeling a kind of tenderness for her that he had never before seen her need.

"O.K.," he said.

And they did.

Much later that night, in a married-personnel apartment at Kennedy Spaceport, Jonel and a much more relaxed and cheerful Sandy lay in the darkness, waiting for sleep. The evening's events replayed themselves giddily in Jonel's mind. The ceremony had been quick and inconspicuous, in a shabby little office in a shabby little town a short distance inland. The presiding magistrate, a nervous little fellow with a droopy mustache, had remarked that Jonel's name was unusual, but managed to get through the proceedings without actually seeming to recognize it. Then there had been a very small party, of sorts, instigated by Henry Clark, and the move into new quarters, and . . .

He was glad to see Sandy feeling so much calmer. After a while he thought she was asleep—and so he was surprised when, after a long silence, she whispered, "Jonel . . . are you awake?"

He whispered back, "Yes."

"Were you watching Beldan during that meeting today?"

Jonel frowned in the darkness. He had thought she'd got her mind off that . . . "No. Should I?"

"I don't know. But I was. You know what I think?"

"What?"

"I think he's scared, too."

"Huh? Why should he be scared?"

"I don't know. Maybe that isn't even exactly what it is. But it's something like that. I could feel it through the whole thing."

"But you've never even seen their species before. How could you—"

"I may be wrong," she said, "but I don't think so. You've often commented yourself on my 'feel' for people and other animals, haven't you? Well, I can't tell you why, but I feel sure something's bothering Beldan. And I think we might be able to help."

Jonel was silent for several seconds. Then he said, "How can we help?"

"I have an idea," Sandy said. "See what you think Henry would have to say about this . . ."

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XI

Clark needed the day off. He again allowed himself to sleep late, and this time no unwanted telephone calls thwarted his plans. He awoke spontaneously at midmorning, feeling more relaxed and refreshed than he had since before the *Archaeopteryx* came home. He rose, washed and dressed, cleared the windows to let daylight flood in, and dialed a breakfast of bacon and eggs from the dispenser in the corner of the room. It came quickly and tasted good. He was halfway through it before he noticed the envelope someone had slipped under the door.

He started to get up, still chewing, to go and get it, but he quickly thought better of it. *No,* he told himself firmly, *a few minutes aren't that important. I've got this far without ulcers and I don't intend to start now. I'm going to sit right here and finish my breakfast before I go back to worrying about whatever somebody wants me to worry about now.*

But he finished breakfast faster than he had begun it.

Then he picked up the envelope and took it to the couch to examine it. It was sealed, but his name was written plainly in bold blue ink on the outside.

He tore it open hurriedly with his thumb, pulled out and unfolded the single small sheet of paper that was inside. It contained only a few terse words, in the same meticulously neat hand that was on the envelope. Clark read:

Dear Mr. Clark:

I have thought over our conversation last night and have decided that I cannot condone your continued secret consideration of the aliens' proposed abuse of the Earth. I cannot in good conscience continue to associate myself with these deliberations. Nor can I in good conscience allow them to remain secret. As a man of good conscience, I feel but one final obligation to you, and that is to inform you of these two decisions so you will not need to wonder where I stand.

Sincerely,
Chandragupta Rao.

Clark read it twice, to make sure he was reading the right meaning out of the stiffly polite phrases. The second time through, slowly and carefully, he began to react, with a mixture of anger at Rao for taking such a step without discussing it first—and worry about what the consequences would be. Up to now he had had only the impending disaster and the Kyyra offer to think about and try to reach decisions about. Now he would have to deal with public opinion, too—a thing he had thought about the day Turabian told him of the threat, but which then had seemed comfortably remote.

Disturbed, his throat dry, he tried to think of something he

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could do now. There was no way to tell when the note had been slipped under his door—very early this morning or even last night—but very probably it was already too late to stop Rao. Even if it wasn't, he had no idea *how* he might stop Rao. The physicist had quite understandably left no word as to where he was going, and he would have had little trouble talking his way past the gate guards. If he had aroused any suspicion, Clark would have already been called. And he hadn't been.

So Rao was gone, and very probably he had already blown the whole business wide open. Clark glanced at his watch. There would be a television newscast in a couple of minutes. That would be a good quick chance to find out how far things had gone.

He switched on his room's receiver and waited through two minutes of commercial drivel with the volume turned low, then turned it up as the news began. Rao was the third item. The staff announcer read from his script, "Chandragupta Rao, co-discoverer of the Rao-Chang drive used in experimental starships, this morning alleged that beings from outside the Solar System have landed on Earth and are engaged in secret conferences with high government officials. Our reporters were on the spot; we give you the story in Professor Rao's own words."

The image on the screen switched to a tape clip of Rao, unsmiling and with just enough stage fright to be apparent to anyone who knew him. "I feel it is my duty," he said quietly, "to inform the public of certain matters which directly affect all of them and which their political leaders have been concealing from them. Several days ago the research starship *Archaeopteryx* returned to Earth. The fact was not made public because of certain events which had occurred on board, but you should know that those events were related to a discovery made by the research party carried by the ship. Galactic nuclei sometimes suffer large explosions whose effects extend to the whole galaxy. If the *Archaeopteryx* observations are correct, our galaxy has suffered such an explosion, which threatens to make the surface of the Earth uninhabitable within a few decades.

"Two days ago rumors began spreading that intelligent extraterrestrials had landed at Kennedy Spaceport. These rumors are true. I have been there. I have seen these aliens and talked to them. I have left now because of my belief that the matter was being mishandled and should be public knowledge. Henry Clark of the World Science Foundation has been in conference with these aliens. They claim that they are already fleeing the core explosion which the *Archaeopteryx* detected, and that they can help us to escape the danger. It appears

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probable that they can do so, but they have given no indication of why they want to. And they have made it quite clear that their proposed methods of help would drastically affect the life of every person on Earth. So I urge every citizen to demand full explanations from his leaders. Perhaps the danger is real, and perhaps the aliens' offer is a good one, but I remind you of an ancient slogan which applies very well to this case. *Caveat emptor!"*

Very interesting, Clark thought numbly. *And very slick, for somebody with neither experience nor talent as a demagogue. Calm, objective, factual—and thoroughly inflammatory. Of course, his vocabulary's too big for some folks, but it'll get translated soon enough . . .*

The television picture switched back to the staff announcer. "Reaction to Professor Rao's statement," he said without expression, "has so far been mild and scattered. There has been some picketing, notably at the UN and at WSF headquarters"—two brief tape clips of New York street scenes, each showing perhaps a dozen people carrying placards protesting bureaucratic secrecy and news management, together with a few curious bystanders—"but our spot checks of the man in the street show responses ranging from mild curiosity and skepticism to 'never heard of it'. Now, turning to state and local news—"

Clark switched the set off and swore at himself for not taking more precautions about Rao. Though it actually might not have been so easy, even if he'd thought to try. It had been hard enough just to get Rao here, no emergency had been declared, and his own nonemergency powers had definite limits. Still . . .

The phone clamored shrilly for his attention. Annoyed, he snatched up the receiver and snapped, "Clark here. What is it?"

The gate guardsman identified himself and then said awkwardly, "Sir, there are a bunch of . . . er . . . people out here who say they want to see you. They don't have any credentials, exactly . . ."

Clark scowled, counted quickly and quietly to ten, and flicked on his screen. "Show me," he said curtly. The screen showed what was happening at the gate. It looked quite a bit like the scenes in New York. One placard read, "The people have a right to know!" Another said, "This is OUR spaceport. Who invited THEM?" Another . . .

"Tell them we're not prepared to admit the public at this time," said Clark. "If they get unruly and you need more men at the gate, don't hesitate to ask for them." He hung up without waiting for a reply.

He stretched out on the bed and tried to think. He had been making progress—slow, but progress. Rao had had no call to throw this monkey wrench into the works, and the

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fact that he had was intensely irksome. Even as he tried to clarify the new status of the problem and how he should react to the changes, Clark kept being sidetracked by thoughts of how he could get even with Rao—or at least keep him from doing any more damage.

He was also sidetracked by a phone call, but to his great relief it was only Jonel. "Sorry to bother you," Jonel said. "Sandy and I wondered if you might join us for lunch. There's a little thing we'd like to talk to you about."

"Is it—" Clark started to ask if it was urgent, then cut himself off. Whatever else was happening, and whatever else they were, those two were newlyweds and friends of his. If he couldn't even take time to accept their invitation to lunch the day after their wedding . . . "I'd be delighted," he said more calmly, "and thanks for asking. About an hour?"

"Fine. See you then."

A minute after he hung up, Clark thought to wonder what the public prints were doing with Rao's statement. He dropped a token in the newsfax dispenser next to the desk, and a minute later he had a sample.

It was on the front page, halfway down, with a three-eighths-inch head reading "EARTH INVADED?" and then a one-eighth-inch subhead: "PROMINENT SCIENTIST ALLEGES FACTS BEING WITHHELD ABOUT BEINGS FROM SPACE." Clark groaned. The body of the short article was essentially the same as what he had heard on television; the headlines were blatantly irresponsible. A friend who ran a news magazine had once taken offense at Clark's suggestion that all caption and blurb writers should have to pass a literacy test, but it still seemed like a good idea. In this case, the relatively inconspicuous position of the article on the page would help to minimize the damage done, but there was simply no excuse for that kind of wording. Especially on the strength of one man's unsupported word—even if the one man did happen to be Chandragupta Rao.

As if the thought were a cue, the phone rang and when Clark answered, an unfamiliar voice said, "Mr. Clark, I've been trying to reach you all morning and haven't been able to get past your underlings. How do you get important calls?"

"I have ways," Clark said coolly. "I take it this isn't an important call?"

"I didn't mean it that way. Listen, I'm Walter Stuart of Consolidated Information Media. I suppose you've heard Professor Rao's statement about the aliens. We'd like very much to get an interview with you—"

"No comment."

"*What?*" Walter Stuart sounded incredulous.

"No comment at this time."

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A long pause. Then, "But . . . we already have a long interview lined up with Rao. It'll be broadcast and printed all over the world."

Clark shrugged. "Well, I suppose there's nothing I can do about that. But if I think of anything, I certainly will."

Another long, unbelieving silence. "I find your attitude astounding, sir. Surely you realize that anything you don't say will be held against you—by the public, that is."

"Surely. When I'm ready to comment, I will. Now, if you'll excuse me, I have lots of work to do—to get ready to comment."

"Have it your way. But I'll be calling back. And so will plenty of others. Interviews with you and Rao are going to be very hot properties before long."

Walter Stuart hung up. Henry Clark didn't; instead, he gave instructions to issue a "No comment," without bothering him personally, to all newsmen who tried to reach him until further notice.

Shortly thereafter, and with a delay time of only thirty or forty hours, he thought of something that should have hit him as soon as Jonel and Sandy had showed up night before last. He put through a call to psychiatrist Stephan Kovacs in New York. "Anything new on Don Lewiston?" he asked.

"Nothing significant. We've hardly had enough time."

"Understandable. I've got a new angle I'd like you to check. I'll have to ask you to regard it as very confidential."

"Agreed."

"I assume you've heard Chandragupta Rao's statements about the aliens who've landed here at the spaceport."

"Yes," said Kovacs. He did not comment further.

"They're basically true, though I think he hasn't fairly represented the problem I face. Anyway, the Kyyra—that's the visitors' name—say they first learned about us by observing the *Archaeopteryx* crew by something that sounds vaguely like machine-aided telepathy, and that Lewiston was apparently aware of the process and may have been receiving some actual information about them. I don't know how you feel about parapsychology—"

"I have no opinion about it."

"—but the angle I'd like you to check is this. Suppose at least some of Lewiston's 'hallucinations' were real perceptions that he just thought were hallucinations because they seemed fantastic and were coming in through unfamiliar channels. If that's true, he may actually know some significant things about the Kyyra. And if you can sort out what he does know—we need it. Badly."

Kovacs was silent for a few seconds. Then he said, "Noted. I'll look into it, Mr. Clark. Strictly confidential."

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And by then it was almost time for lunch.

Thoughts of what to do about Rao intruded once or twice, but on the whole the meal Sandy had fixed in the Turabians' apartment was a pleasant interlude. The food was good and the conversation refreshingly light. They were into dessert—blueberry tarts—before anybody brought up the "little thing" Jonel had mentioned on the phone.

"It's just this," Sandy said. "When I was watching our visitors yesterday, I had the feeling they were as tensed up about this as we are. Maybe even more so."

Clark frowned. "Now why should that be?"

"I don't know, but I can make some guesses. Try to put yourself in Beldan's place. Practically alone on a planet full of aliens, bearer of grim news and an offer of a cure that's almost as scary as the disease. One tense session a day with the alien leader—that's you—"

"He could untense them a lot if he'd just come out and say what's in it for them," Clark muttered.

"Could be," Sandy granted. "But maybe there's some reason why he can't—or he honestly doesn't see why we keep harping on that question. Take a look at anthropology—there's an amazing variety of outlooks just among human cultures. Anyway, he has that one grilling a day and that's all he sees of us. The rest of the time he sits cooped up in a room designed for humans because you talked him into staying there for security reasons—which I suspect he also doesn't understand. Anyway, I got to wondering if you would have any objection to Jonel and me inviting the three of them to visit us here when the talks aren't in session. Like this afternoon or evening."

Clark stopped chewing and looked at her, perplexed. "For what purpose?"

Sandy shrugged. "Just a social call."

"A *social* call? Why, what on Earth could you have in common with them?"

Sandy smiled disarmingly. "I guess we're not likely to find out unless we try, are we?"

Clark chewed vigorously, stalling to think of a good answer. At first glance, he didn't like the idea; but it was hard to verbalize why. Finally he said slowly, "As you say, we know very little about what they're really like. By seeing them alone like that, under . . . er . . . uncontrolled conditions, you could be exposing yourselves to danger."

"Could be. But are the conditions really any more uncontrolled than in the official meetings?"

"Hmph. Well, try to look at it from Beldan's point of view. He might have the same kind of worries about unnecessary exposure to humans."

"Or he might be as indifferent to

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them as we are. It doesn't cost much to ask."

"*Probably* not." He looked at Jonel. "Jonel, she said 'we'. You've been sitting there pretty quietly. What do you think about all this?"

"It was Sandy's idea," said Jonel, "but I find it intriguing. From curiosity, if nothing else. And maybe we even can help put them more at ease. Sandy's pretty good at that."

"So you don't mind trying it?"

"Not at all."

"Hm-m-m." Clark put his final bite of blueberries in his mouth. As he chewed it, he suddenly saw something he had been missing through the whole conversation. By the time he finished the bite, his decision was made. "Since you seem determined, I'll say O.K., in spite of the things I've already mentioned. Because it just occurred to me that maybe this is what I've been needing, too. You saw how Beldan was evading my questions yesterday. Maybe if you *can* establish some sort of friendly relationship, you can find out what I couldn't—if not an outright statement of their motives, at least some understanding of that cultural outlook you mentioned." He grinned and winked at her. "If anybody can do it, Sandy, I'll bet you can."

She returned his smile, but with a certain cool detachment. "Thanks," she said. "I don't intend to spy on them, but if I learn anything you should know, I'll tell you."

Beldan accepted the invitation with surprisingly little discussion or comment—surprising, at least, to Jonel, who had anticipated the kind of reaction Clark had warned against. But Beldan showed neither apprehension nor hesitation. He simply thanked Sandy for the invitation and made sure he knew the correct hour to come. He even agreed that he would be glad to share their supper—a subject Sandy had hesitated to broach because of her uncertainties about both biochemistry and etiquette.

He did, however, say that he would be coming alone. He offered no reason why his two compatriots would not be with him, and neither Jonel nor Sandy asked for one. But it was not hard to imagine possibilities. Possibly they were not interested, or there were social class barriers, or coming here was considered such a dangerous mission that only one of them should volunteer for it.

The doorbell rang at precisely the hour Sandy had specified. She was busy with the meal then, so Jonel opened the door. "Hi," he said, "come on in." Beldan towered in the hallway and had to stoop slightly to come through the door. Once inside, he stood; simultaneously awkward and awesome, as if awaiting further instructions. The apartment had a low ceiling and so far contained few decorations except the ones that came with it, so Beldan made an even more impos-

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ing picture standing here than he had in the conference room.

Sandy came into the living room, smiling broadly. "Beldan," she sang out cheerfully, with surprisingly accurate intonation, "welcome to our humble abode. Sit down wherever you like; we're not very formal."

"Thank you," said Beldan—rather stiffly, Jonel thought, and without making any move toward a chair. "If you will excuse me. . . . before I sit, it is custom among the Kyyra for a guest to offer his hosts a gift. It is just a small thing." He reached inside his robe and pulled something out. He handed it to Sandy. "Here. For the two of you."

Sandy took it and turned it over in her hands, staring incredulously at it. "Look at this, Jonel. Isn't it beautiful?" It was a relief sculpture showing two Kyyra standing on high ground in front of a city of fairy-tale architecture, under a domed canopy of stars. It was set in a hemisphere six inches in diameter, meticulously crafted down to the smallest details, and—Jonel reached out and felt it—apparently solid metal. And not just metal, but an astonishing swirling blend of what looked like gold and silver and at least a dozen alloys. It would have cost many thousands of dollars—if any human craftsmen knew how to make it. Sandy smiled at Beldan. "Thank you, Beldan. We'll always remember who gave it to us. Now, would you like to sit down?"

Sandy laid the gift aside, on a table, and Beldan sat in the nearest chair. He still seemed somewhat uncomfortable. He took his pipe out and softly played a short tune made of two long, winding phrases. When he stopped, Sandy asked him, "Have you heard any of our music?"

"Some, I believe," said Beldan. "When we were in orbit and listening to your electromagnetic broadcasts."

"There are kinds you've probably missed," Sandy told him. "Would you like to hear some? If you don't like it, I'll take it off whenever you say."

"I would be glad to hear it." Beldan put his pipe away. Sandy went to the entertainment console, looked thoughtful for a moment, and then punched out a code for something in the spaceport's central library. As she came back to join Jonel on the couch, a long, soft note overlaid with fragments of melody started up from speakers all around the room—the beginning of Mahler's First. Beldan looked attentive, but said nothing.

Jonel felt a little awkward, too. So far he had been almost entirely a bystander—but then, Sandy had always taken much more naturally to this sort of thing. He went to the kitchen and returned with a bottle and glasses. "We sometimes have a glass of wine before supper," he told Beldan. "Would you like one? Maybe I should warn you that it

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contains ethyl alcohol, which acts as an intoxicant if you have too much of it."

Beldan, for the first time since coming here, smiled—and there was little doubt that it meant the same as a human smile under similar circumstances. "For us, it does not," he said. "Yes, I will be glad to have a glass of wine, I have already tried it and found it . . . agreeable." He reached out and took the glass Jonel poured for him. "Thank you." As Jonel poured two more, for Sandy and himself, Beldan fished a smooth gourd-like thing out of his robe and poured a drop of wine into the top of it. He waited a few seconds, then laid the gourd down in his lap and took a sip of the wine from his glass. "You see," he said, smiling again, "there are some differences in our metabolisms, as you might expect. Many similarities, but also differences. Alcohol has no effect on us. The main thing we must be careful of in your food is chlorophyll. But don't be alarmed, Sandy; I promise not to get drunk on your broccoli." He tapped the gourd. "All of us on the convoy ships carry these to make life simpler. If we must eat unfamiliar food—or have the opportunity to try exotic treats, as I do tonight—the converter will analyze a small sample of each item. If it finds anything we are not equipped to handle—such as chlorophyll—it will immediately prepare a liquid which will eliminate the danger to us."

"Very clever," Jonel said. He meant to ask Beldan what the plants on the Kyyra worlds used for photosynthesis, but he was interrupted by a timer bell from the kitchen.

"That means the chlorophyll's ready," said Sandy, standing up. "If you gentlemen want to move to the table, I'll have the food up in a jiffy."

They moved, and she did. As she dished out meat loaf and vegetables, Beldan picked up samples of each and dropped them into his converter. When everything had been sampled, he picked the gourd up, aimed it like a wineskin at his mouth, and a thin stream of clear bluish liquid squirted straight down his throat. It stopped after half a minute or so; then he laid the gourd down and attacked the food with no further inhibitions. Jonel was a little surprised that he seemed thoroughly familiar with knives and forks, but quickly realized that he'd probably been practicing in the quarters Clark had provided.

"I find your music . . . interesting," Beldan said suddenly, during the relative quiet following one of the minor climaxes which abound in Mahler. "This that we are listening to now—it is a recording of many individuals simultaneously playing on instruments comparable to my pipe?"

Sandy nodded.

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"Most interesting," said Beldan. "That kind of complexity is something quite new to me. But I can see the possibilities."

"That kind of complexity is peculiar to one branch of human culture," Sandy told him. "There are still quite a few places on Earth where the people would find it as novel as you do."

Gradually, as the meal progressed, Beldan showed signs of relaxing. And as that happened, Jonel also began to feel more at ease. Beldan still seemed distant and mysterious, but not utterly unknowable—possibly not even unlikable.

After supper they moved back to the living room and Jonel noticed an insistent scratching sound. He asked Beldan, "Have you met any dogs since you came to Earth?"

"Dogs?" Beldan seemed at first not to recognize the word. Then he said, "I remember seeing them on television. I don't believe I have seen any in actuality. They are small furry animals, aren't they?"

"Yes. Would you like to meet one?"

"I'm not sure. My memories of them from television are mixed."

"This one's very friendly. And if you don't get along, we can lock him back up in the bedroom where he is now."

"All right. I will meet this . . . dog." He looked vaguely apprehensive as Sandy went to let Ozymandias the Mutt out of the bedroom. Oz came out with a bound. Jonel himself was a bit uncertain about the results—neither Oz nor Beldan had ever seen anything like the other before. But after the first tense moments, they found each other fascinating, and in fact Oz proved to be the final influence which put Beldan more at ease than they had seen him yet. Beldan and his hosts talked of the role of pets in human society—apparently the Kyyra had none—and finally Sandy felt bold enough to mention Beldan's discomfort in the meetings. She did it discreetly, by mentioning offhandedly that he seemed much more relaxed now than when she first saw him yesterday.

He nodded and kept stroking Oz, who was lying contentedly on his side next to Beldan's chair. "That is true," said Beldan, abruptly solemn. "I feel . . . uncomfortable . . . here. Not here, tonight, in this room, but everywhere else. Next you will ask me why, and I will say that it is hard to explain. I do not know how to say it in your language; I do not even know whether it can be said. But I can try. I feel things among your people that are unfamiliar and uncomfortable to us. The things you call suspicion and distrust . . . the . . . this is especially hard to communicate . . . the absence of God . . ."

Jonel was a little startled to hear Beldan speaking in such terms. As he pondered it, he heard Sandy

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say, "I don't think that's quite universally true, but it's interesting that you should comment on it. Would you be offended if I asked you what kind of God the Kyyra believe in?"

"I would not be offended," said Beldan. "However, it is not a question of belief, but of simple fact. But I would prefer not to talk about it."

"Why?" Sandy asked innocently, momentarily unthinking. Her face immediately showed that she wished she hadn't said it—but it was too late now.

Beldan stopped scratching Oz. His eyes bounced back into their sockets, and when they returned to normal he averted them, looking at the wall to his left rather than at Jonel or Sandy. "Our God is dying," he said in a low, choked voice. "We're killing Him."

XII

There was nothing Clark could do about Rao, of course. True, there was the verbal agreement he had recorded the first time he visited the physicist, under which he could prosecute for breach of confidence. But in practice that would be difficult and time-consuming and would do nothing to undo the damage. Done now, it might even prove politically disastrous by inviting still more charges of unwarranted secrecy. So Clark wasted little time lamenting things he hadn't done. He even found, after the initial shock, that he was rather relieved to have things finally out in the open.

Having them out in the open changed much more than Clark's discomfort at having to be secretive. Very shortly after Rao's statement, Kennedy Spaceport reopened—a measure which had the incidental advantage of restoring at least a small measure of plublic confidence. Security measures remained around the parked Kyyra shuttle and the living quarters of the Kyyra themselves, but at least human shuttles could resume normal operations. And, although the surface of most of the Solar System had barely been scratched, there was enough key industry in orbit and on the Moon to make normal operation of the shuttles an important matter.

The human-Kyyra conferences went on, still in the same conference room near the Kyyra quarters, but with changes. With the public aware of aliens on Earth discussing changes that would radically affect the whole planet, Franz Gerber no longer dared leave the whole matter in the hands of a single man with the unimposing title of Lieutenant Commissioner of Grants. So with considerable fanfare, he demanded that the visiting Kyyra be brought before a special closed session of the UN Security Council, under his personal supervision. They went without protest, accompanied by Clark and Sanchez

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aboard a sealed plane met in New York by a sealed limousine. They listened attentively to the Council's ceremonial greetings, but shocked the Council by playing their pipes in the middle of Gerber's prepared speech. When asked, Beldan briefly explained their reasons for being on Earth, but the details were obviously beyond most of the Council members. The whole experience was so traumatic for many of them—including Gerber—that they were even more relieved than insulted when Beldan made it clear that he would prefer to return to Florida and continue dealing with Clark. Gerber promptly granted the request "for the time being." But, as a final face-saving gesture, he enlarged the meetings, sending a panel of reasonably prominent specialists to go over the Kyyra proposals with a fine-toothed comb.

And, of course, the public had to know. A majority of the deliberation committee backed Clark in his contention that unlimited publicity would be unwise, so the conference room was not thrown wide open to newsmen. But Clark and two other members of the committee had to submit to regular press conferences—at first daily, then later tapering off to once a week.

And the first pictures of the Kyyra were published. They did not appear often, and Beldan seemed mystified by the reasons for the original request. But Clark—largely through the help of Sandy Turabian—managed to persuade him and his associates to sit for a few portraits.

The pictures played a surprisingly important part in shaping public reactions, which grew rapidly at first—and in many directions. The anger over governmental secrecy remained, but more attention gradually focused on the astronomical danger, the Kyyra themselves, and their proposal. At first there was a rash of demonstrations representing a range of opinions and—predictably—more emotion than thought. Most of them fell into two rough categories: "It's the end of the world but here's a chance to do something about it," or "It's the end of the world but we deserve it and it would be against the will of God to resist." (There was also a relatively small "I don't believe it" school—but then there was still a Flat Earth Society, too.) Each category further divided into a rich spectrum of subsects, but each included plenty of hot-headed fanatics and each managed to drum up all manner of support for its position—including biblical quotations.

Clark worried a little when he saw religion being dragged into it. Such an argument was difficult enough when all involved were making an honest effort to be rational and objective. If it became a matter of religious fervor, rationality and objectivity would tend to be

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drowned out. And there were special reasons for concern in this case. They were directly related to the pictures, and Clark himself understood them only too well. He vividly remembered his own reactions on seeing the Kyyra for the first time, and later when he had found himself unconsciously regarding them as virtually omnipotent benefactors who could save man without unpleasant side effects. He, trained to think self-critically, had caught himself in time—but many others had no such safeguards. The appearance of the Kyyra was an unfortunate accident, and pictures of their orbiting starship only tended to strengthen feelings of awe. It was too easy for humans to think of them as godlike, or divinely sent, or whatever most closely fit their particular beliefs. Traditional beliefs had not been especially strong or popular in the last couple of decades, but there was a noticeable trend toward revivalism in the early days of the Kyyra talks.

But as fall turned into winter and the talks dragged on, the initial wave of public response faded. It didn't die, but when nothing came out of the press conferences except lists of technical details, much of the public lost interest. News releases became less frequent and moved to the inside pages of the papers. The most vocal proponents of either jumping at the Kyyra offer or (if possible) running the Kyyra off the planet remained vocal, but people paid less attention to them.

Every couple of weeks somebody would publish an opinion poll, which tended to show sizable minorities—say thirty percent—but never majorities, in favor of accepting the offer. Toward the end of November the polls began to show something else, too—action. One of the earliest things to come out of the news conferences with the deliberation committee had been the statement that many buildings would have to be modified to withstand the trip, and that some of the modification could be done either before or after the trip started. Successive conferences yielded more details. Papers and magazines—some of them with tongue obviously deep in cheek—ran "how-to" articles on making your home spaceworthy in case the Earth is moved to M31. Some people paid attention. Business began to boom quietly in materials for making houses sturdy and airtight and able to recycle their own air and water. Scattered citizens began openly converting their homes, just in case. And in many cases they found themselves victims of persecution by their neighbors, in forms ranging from gentle ridicule and social snubs to large-scale vandalism and physical attack.

That Clark watched with real misgivings. Some police departments hinted that he was to blame

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for growing lawlessness by encouraging people to go in for weird behavior that naturally attracted suspicion. After one such incident—a case near Christmas in which a suburban Indianapolis family which had been converting had its home burned to the ground and the local police responded with some especially vicious innuendos—Clark finally said something about it to Joe Sanchez.

They were in Sanchez' apartment at the end of an unusually tedious talk session. Sanchez was seated, with a cigar in one hand and a drink in the other. Clark paced the floor, hounded by frustration. Standing at the window with his back to Sanchez, he remarked, "You know, Joe, I'm beginning to see problems about this that I'd hardly dreamed of when it first came up. Suppose we do decide to accept their offer and move the Earth. How are we going to actually implement all the changes that are needed?"

"Some people are already doing it on their own."

"Yes, but look at the trouble they're having. Look at this thing in Indianapolis. How can you work on a major project like that when your neighbors won't give you any peace and the police are as likely as not to side with them against you?" He sat down, crossed his legs, and looked at Sanchez. "Besides, it still wouldn't be enough. Even leaving public buildings and utilities out of the picture. You remember when Beldan said homes could be modified easily and I asked, What about all the people who can't afford it?"

Sanchez nodded. "Yes."

"He just said we'll find a way to do it if we want to. I've been thinking about that. I've been thinking about it a lot, and I've gradually found myself forced to the conclusion that we won't. Not the way things are now."

"What do you mean?"

"Our whole political and economic organization is all wrong to do that kind of thing. I think the technical resources exist to help almost everybody make the trip alive, but we don't have a chance of getting to more than a few in the time available. Not the way we're used to doing things."

Sanchez was eyeing him narrowly. "Do you have any better ideas?"

"I'm getting more and more afraid that it's going to take something like martial law on a scale we've never seen before. A really strong central authority with the machinery to get things done fast and efficiently over the whole world."

Sanchez stared at him for a long time. "Don't get carried away, Henry," he said finally. "That's strong language. I don't think you have to start thinking that way."

"I hope not," said Clark, "But I'm afraid you're being naïve."

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"And I hope you're being facetious. I really do."

But the look on his face haunted Clark's memory for a long time.

Through it all, Clark kept trying to find the motives for the Kyyra offer. Oddly, the public that wanted pictures was more interested in gossip about the aliens' everyday lives than in concrete reasons for their actions. They remained reticent about that, too. Clark still considered the motive question far more pressing and directed his main efforts toward that. Again and again he raised the question in different ways, and again and again Beldan gracefully evaded it. Clark tried again to enlist Sandy's direct aid, and again she told him she would not do any outright spying and did not yet know Beldan well enough to make any statement about him. He checked back with Kovacs periodically, but the psychiatrist never managed to reconstruct anything coherent from his interviews with Lewiston.

Frustration grew. As the winter progressed, Clark was increasingly plagued by the feeling that nothing else was progressing at all.

At least part of the hunch that had led Sandy to invite Beldan to visit was apparently right. The original visit proved the first of many, and as fall passed into winter she gradually came to feel that she was gaining inklings of what made him tick. There was not much that she could put into words, yet, except the conviction that he had indeed needed some more relaxed contact with the aliens who lived on Earth and that she seemed to fill that need and gain his confidence as no one else had done. When Clark had spoken of the possibility of "some sort of friendly relationship," she had taken the phrase lightly. It had seemed too much to expect. But a few weeks later she realized as she was going to sleep one night that something of that sort had in fact developed.

The air of mystery remained, of course. She came to regard Beldan as a friend, but at the same time he never ceased to be alien also. In that fact lay part of his fascination. He was less aloof with her than with others, and the two of them could find common ground to talk about, but he still had a certain inscrutability. Through all their conversations ran the feeling that he was seeing the whole world from a different angle, and Sandy had never quite managed to get her eyes and mind in the right position to see how it looked from there. But she never quit trying.

Sometimes she lay awake far into the night, thinking over something he had said, comparing it with other things he had said earlier, trying to see the pattern that tied them all together—but never quite succeeding. She wondered why he seemed to sidestep certain questions even when she asked

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them—yet at the same time always seemed to be honestly trying to be completely open and frank. She wondered often and hard about the remark he had made on that first visit, about their dying God. But she could never bring herself to ask him about it.

She wondered and thought about other things, too. She never lost sight of what was behind the whole web of events since Jonel's return, and the decision that must be made. She took to reading whenever she had time, about things like galactic structure and supernovae and Seyfert galaxies. When there was something she didn't quite understand, or she had an idea about a possible implication of something she read, she asked Jonel, who had pursued formal studies of astrophysics as far as a Master's degree. Sometimes he found her questions puzzling, seen without the context of her thoughts, but he always tried to answer them as well as he could. She in turn pursued each point she considered until she could pursue it no further. Many of them seemed to be dead ends; others seemed likely to be significant but she couldn't see clearly why. All of them she filed in her mind for future reference, with no more definite idea of what she was doing than that she wanted to understand as clearly as possible the background against which a decision would be made. If she understood well enough and the decision which came seemed to ignore something vital, she would not hesitate to point it out.

Sometimes—such as the times when the committee wanted to confer with Jonel privately—Sandy did things alone with Beldan. That worked out rather well, in a way. Although Jonel was completely sympathetic toward Sandy's efforts to befriend Beldan, he himself never felt quite the empathy for the Kyyra that she did. Quite possibly that was why Beldan sometimes seemed even more relaxed when Jonel wasn't around. Those times led to some of the incidents which engraved themselves most deeply on Sandy's memory.

Like the time she showed Beldan her oboe, as one of the rough human counterparts to his music-pipe. He watched and listened attentively as she warmed up with a few quick scales and arpeggios and then started one of the oboe solos from the slow movement of the Mahler symphony he had heard. Halfway through it, he suddenly took out his pipe and began playing along, improvising a part that was nothing Sandy had ever heard but which blended uncannily. And where the Mahler oboe part sank back into the orchestra, she found herself improvising too, to avoid stopping. For over a minute the two of them played on, listening to each other and weaving a counterpoint, which, at least to Sandy, made good musical sense. Then, partly because she

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was afraid she couldn't sustain it any longer, she led her part toward an ending—and Beldan followed. They stopped together. For another minute Sandy sat almost breathless with exhilaration at what she thought they had done—but afraid to ask. Finally Beldan said, "That was very good," and she knew she was right.

There were other incidents too. After the spaceport reopened and the Kyyra presence became common knowledge, Clark's attitude toward security relaxed somewhat. By the beginning of December he had reached the point where he was willing to let either or both of the Turabians take Beldan on excursions outside the spaceport. There were special security requirements for those, of course. They had to use a special car in which Beldan could ride without being seen from outside, he was never to get out in the presence of other people, and the car maintained constant electronic surveillance to be sure those conditions were met. But the fact of being able to show him the outside world at all was a radical and welcome departure.

On one of the earliest trips, Sandy and Beldan stood on a deserted shore of sand and scrubby grass beside an inlet barely outside the north end of the port. The day was bleak and unseasonably cool, with amorphous gray clouds streaming past overhead, in different directions at different levels. At ground level the winds chilled Sandy enough to make her wear a sweater fully buttoned and whipped the water into a choppy froth. Here and there a pointed fin would occasionally appear among the waves, sometimes accompanied by an arching back that rose and descended in a single flowing motion, and once or twice a porpoise jumped completely clear.

Sandy and Beldan watched silently for many minutes, Sandy feeling a kind of melancholy she didn't quite understand, unless it could be blamed on the weather. After a while Beldan remarked, "They look as if they are playing."

Then Sandy thought she understood her feelings—but instead of going away, they intensified. "They *are* playing," she told him. "They're very playful animals—and very intelligent. We've just begun to learn how intelligent in the last few decades. Some say they're as bright as we are, only adapted to a completely different environment. You hear the noises they're making? They're talking to each other. We've finally started learning the language—just enough to know there's a lot more to learn." She stopped, looked around at the porpoises, and then back at Beldan. "Beldan, what's going to happen to them?"

Beldan didn't look away, but his expression was hard to read and for half a minute there was no sound except the porpoise talk and

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the lapping waves. Finally he said, "I don't know. That is a problem we have not faced before. But I do know that the oceans will change. If you want to save the things that live in them, you will have to find ways. And there may not be time."

They said little more about it then, but the day kept getting grayer and later kept haunting Sandy's dreams.

At Christmas the committee adjourned for several days and Clark's security policies had become still more liberal. Jonel and Sandy took the special car and drove up to her—now their—house in the Tennessee mountains, taking Beldan along. The car was equipped so he could watch the scenery from his compartment, and though he was still disturbed by the fact that Clark considered the special compartment necessary, he seemed to enjoy the trip. They spent four days in the mountains, and Beldan liked to stroll around the yard in all kinds of weather, asking Sandy questions about things he saw ranging from valleys full of morning fog to the vein patterns in fallen leaves. On the second day, it snowed, a wet, fluffy snow that clung to tree branches and trunks, and that night it changed to freezing rain and then cleared. In the morning it was ten below and cloudless, the snow on the ground deep and smooth-crusted and the tree branches uniformly sheathed in ice that sparkled dazzling in the sun. As soon as Sandy was awake, Beldan wanted to go outside. He didn't add any visible clothing—either his metabolism wasn't picky about temperature or his robes incorporated some pretty sophisticated thermal controls. But he stayed out for a long time and seemed thoroughly fascinated by the changes the weather had wrought in the landscape. "It's like seeing it for the first time," he said with obvious excitement as they went back into the house. "A planet is truly a remarkable thing."

Sandy squirmed out of her boots and laughed. "You say that as if you were seeing a planet for the first time."

"I am," he said. "I have spent my whole life aboard my ship. I have missed a lot."

"Oh." Suddenly Sandy felt sorry for him, and at the same time found his discomfort on coming to Earth easier to understand.

And then she remembered that if the migration were carried out, Earth would become more of a ship than a planet.

Slowly, through incidents like that which were hard to assess taken singly, Sandy developed a growing understanding and affinity for Beldan and his race. Yet through it all she kept having the feeling that something not yet identified was bothering him.

Something most definitely bothered him when, in mid-January,

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somebody tried to blow up his shuttle.

XIII

Franz Gerber was on the phone almost immediately after that—meaning as soon as the word reached him via newsfax. Henry Clark held the receiver an inch from his ear to keep the volume down to a bearable level as the UN head fumed, "Damn it, Clark, what *are* you doing down there? Don't you even have enough sense to keep your security tight? You maybe *want* to let some imbeciles bring the wrath of a vastly superior power down on humanity's head?"

"You're being unnecessarily melodramatic," Clark quoted wearily. "The wrath simply hasn't happened. Sure, Beldan was badly shaken up. I gather that among the Kyyra violence and that kind of irrationality are unknown, so he has trouble understanding it. But he does understand that we're an alien species and he has to expect us to do some things that seem odd. And he understands that even conscientious attempts at security may not be perfect." He didn't bother to mention that, before the sabotage attempt, Beldan had not even understood the basic need for any kind of security measures. Instead he finished by adding, "But we have found some ways to tighten security around the Kyyra shuttle and quarters."

"I'm very glad to hear that. Though it sounds a lot like locking the barn door after the horse is stolen."

"They didn't get the horse."

"No, but they *might* have. Just be sure they don't in the future."

Clark shrugged. "We'll try our best, but you can expect other attempts. Somebody once wrote that violence is the last resort of the incompetent, but that's not quite right. Often it's the first. And sometimes it's tried by somebody who isn't quite as incompetent as you'd like."

"Hmph." Gerber paused briefly and then changed his tack slightly. "All I know about this is what I've got through the public media, but you're right on the spot. Exactly what happened?"

"I find it very interesting," Clark observed wryly, "that you haven't shown any personal interest at all in this whole business until some little thing happens to scare you. And then suddenly you want to know everything and start jumping all over me."

"That's because I like to think I can trust things to you and sometimes you make me seriously doubt it. I asked you a question. What happened?"

"We don't know yet, Franz. Except in the most general way. Somebody got past the guards last night and got close to the Kyyra shuttle with a bundle of explosives and equipment to set them off. We know they were explosives because

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he left some of them behind when he ran."

"He *ran*?"

"Yes. Some guardsmen noticed him just in time and scared him off. He got away."

"He got away," Gerber echoed as if he found it beyond belief. "What kind of guardsmen do you have there? Don't they have guns? Or don't they know how to use them?"

"They have guns. We don't know how or why the saboteur got away. I'll admit it seems odd. We'll be questioning all the guardsmen, but of course we haven't yet."

"Humph. And you have no idea who it was?"

Clark hesitated a split second before deciding not to mention his suspicion that the saboteur was somebody who knew something about the security arrangements and likely even had some part in them—such as one of the guardsmen. He just said, "No."

"No idea whether it was an isolated crackpot or part of an organized conspiracy?"

"Not yet. Look, Franz, we've only had a couple of hours since this thing happened. We're getting a full investigation under way, but it's hardly had time to produce any conclusions yet."

"I suppose I can grant you that. But it just raises a larger question that's been bothering me. You haven't had enough time for this investigation, but how about the original one you started in the fall—the one about the aliens and whether we should accept their offer? Can you honestly say you haven't had time to get results from that one?"

"I—"

"You're supposed to be collecting information. Well, what information have you collected?"

Clark scowled. "Haven't you been paying any attention to the papers except when they happen to scare you? We've been releasing information all along. Details about what the trip will entail, how people can prepare themselves for the trip—"

"All that is *if* we make the trip at all. When will we have enough to make that decision?"

"As far as I'm concerned," said Clark, "we already have all we need."

"What?" A familiar anger flared up in Gerber's voice. "Why wasn't I told?"

"All I mean is that we're not really getting any significantly new information any more. I think what we have is enough for anybody to reach a decision about what he thinks should be done."

Impatiently: "So what is your recommendation?"

"I have an *opinion* about what *I'd* like to see done. That's not the same as a recommendation."

"Quit splitting hairs. I don't care what you call it. What's your opinion?"

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"I'm not sure I want to give it yet. It might sound too much like an official pronouncement. And I'm still wrestling with moral issues."

"*Moral* issues? Look, Clark, this is no time for philosophy—"

"On the contrary," Clark interrupted, glaring at the phone, "There has never been such a time for philosophy. If it'll make you feel any better, though, one of my moral issues is very, very practical."

"Yes?"

"*If* we decide to accept the offer, exactly how do we go about making the necessary adjustments on a worldwide scale so that as many people as possible can make the trip safely? That's a practical problem because there's a tremendous amount of logistics, economics, and politics involved in getting the materials and know-how to the people—and remember the people we have to get them to include Eskimos, Hottentots, and Australian abos as well as the ones you're probably thinking of. And it's a moral problem because the only ways I've been able to think of involve giving governments more power than I like to see them have. Even in an emergency."

"Hm-m-m." Gerber remained carefully noncommittal. "What's the other one?"

"It's simply the question of how to make a decision at all, knowing how drastically everybody who disagrees with it is going to be affected. The people have the information, but they haven't reached any consensus about what to do with it."

"Haven't they? I thought I'd seen polls—"

"That showed something like thirty percent in favor of going? You have. But those polls are local, for one thing. They ignore whole populations of countries. Some of them don't even know what's going on."

"Those countries wouldn't be likely to differ much from the others."

"A moot point," said Clark.

"Well, assume it for the sake of argument. Thirty percent in favor of going. That's seventy percent opposed."

"Even if I grant you that, it's not a real consensus."

"It's good enough for practically any election in the world."

"And in that respect those elections are a farce, but fortunately the stakes in them aren't really very high. In this one they are. I'd like to see a *real* consensus, and so would Beldan. We'd like to see nearly unanimous agreement on a course of action."

"You're out of your mind."

"Probably. But I can wait a little longer before I give up. Right now I can't even get a consensus from your committee. Incidentally, on your thirty-seventy argument—remember that those are percentages of people now living. How would their descendants vote?"

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Gerber was silent briefly. When he spoke again, his tone had changed subtly, as if he had finally started to grasp some of the real implications of the problem. "I'm not used to thinking like that," he said with unaccustomed slowness. "But I can see why you bring it up." He paused again. "Does it *have* to be that kind of a decision? Couldn't we let the people who want to go, go on ships, and let the others stay here?"

"Not a chance. I can see you haven't looked at the arithmetic, but I have." Clark thought back to his first meeting with Chandragupta Rao, and the memory triggered a whole string of others. Since his break with the Kyyra talks, Rao had spoken out frequently against accepting the Kyyra offer or even continued talks having that as a possible outcome. Clark had stubbornly resisted answering him directly, and even now he wasn't sure it was a wise decision . . . He told Gerber. "Thirty percent want to go. There's no way we can do that with ships. Maybe a thirtieth of a percent, with real heroism and incredible luck—but not thirty. And we have to assume there won't be a second chance for those who stay behind. The Kyyra are here *now* and they're moving out. And we can't do it without them."

"Hm-m-m." Gerber paused again, and then abruptly recovered some of his usual commanding air. "Well," he said crisply, "It's quite clear from this sabotage incident that some people have strong feelings about it. The longer we have *them* on Earth and a decision hanging in the air, the more trouble we're going to have. I don't want that. So, Mr. Clark, if consensus is what you need—I strongly recommend that you come up with a way to produce a consensus. Fast."

And with that he hung up.

He was right, of course. The realization that that was the next thing really needed had been gnawing at Clark's consciousness for several days. He had semi-consciously avoided it, tried to stall, because he had so little idea of

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how to achieve it. He had a lingering, lurking fear that Gerber was right, that real consensus even within a single nation was so far-fetched that it was a quixotic waste of time to seek it. Yet he also clung to a faint hope, however far-fetched it might be, that in just this one special case it might be possible.

Indecision again. Over and over he mentally raked himself over the coals for it, but the indecision remained.

Gerber's call demanding that something be done soon brought the matter to a searing focus in his mind. He thought about it night and day. He felt again, as acutely as in the first days after the *Archaeopteryx* came back and the Kyyra shuttle followed, the crushing pressure of unsought responsibility. Dreams of Dianne haunted his sleep more often than ever before, dreams in which she was back with him and listened as she always had before—but when she tried to speak, nothing came out.

The investigation of the sabotage attempt promised at first to provide a temporary diversion for part of his attention, but quickly proved to be nothing more than an additional headache. Talks with all the guardsmen in the area, held in the couple of days following the incident, failed to pin any blame on any of them. Nor did any of them provide any leads that seemed to lead anywhere. "Run them through again," Clark snapped impatiently when the head investigator told him they had exhausted the possibilities.

Two days after Gerber called, pressure was added from a new and unexpected source. The talks had become routine and dull these days—they seemed to be eternally circling over the same ground and never landing on anything. At the end of this one, as the representatives of both species filed out of the room, Beldan strode over to Clark and said quietly, "May I talk to you privately, Mr. Clark?"

"Certainly," said Clark, both surprised and apprehensive. "Will this room be all right?"

"This room will be fine." He waited until all the others were gone, then closed the door and turned back to face Clark. Clark had the fleeting thought that the Kyyra's height gave him an unfair advantage. Then Beldan said, "I have been in communication with those on both my convoy ship and the planet we are accompanying. They have asked me to convey to you the necessity of your reaching a decision in the near future."

The words hit Clark like an electric shock. "But," he said uncertainly, "there is still much to settle . . ."

"We don't think so. I don't believe you really think so, either, do you, Mr. Clark? It is my belief, as well as that of those you would call my superiors, that all the essential

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information is in your hands. If there are really central points of uncertainty, I suggest you formulate your questions tonight and clarify them at our next meeting."

"I . . . I'll try. If you'll forgive me, Beldan . . . this comes very suddenly. How soon must we give our final decision?"

"We would like to avoid imposing the indignity of a rigid deadline. We will do so if it seems necessary, but it is foreign to our nature except as a last resort. First we will simply ask you to give us a decision as early as you possibly can, bearing in mind that there is an element of urgency."

"I'll see what I can do," Clark nodded numbly. "May I ask why the sudden rush?"

"It is not a sudden rush. We believe you have had all the essential information for a considerable time and have failed to act on it for reasons which are less than clear to us. Meanwhile, our planet has been continuing outward, receding from us at a super-c velocity. It has to retain that velocity, Mr. Clark. A planet is not conveniently refuelable and is therefore far less maneuverable than a ship." *Especially,* Clark reminded himself, *at the speed your planet is going. And again we have the question: why?* Beldan finished, "The farther behind we fall while waiting for your reply, the more difficult it is to catch up. We have already fallen a fair fraction of a light-year behind. We do not wish to lose much more time—particularly if you intend to refuse our offer."

Clark nodded. "I'll try to get you a decision as soon as possible," he said, and he meant it. Put that way, Beldan's concern was quite understandable—given that their planet was traveling so close to the speed of light that it was energetically impractical to change the speed very much.

But again Clark found himself utterly perplexed by the question of why they chose to travel at such a speed—and why they seemed convinced that that question was not irrelevant to the larger ones he faced.

It was Clark's idea to take a personal appeal for reason—and hopefully consensus—directly to the people. It was Sanchez' idea that he should do it in a live appearance.

It seemed like a good idea at the time. Part of the reason for public distrust to this point had been the fact that all the deliberations were carried out behind closed doors. News filtered out, but the trouble was that "filtered" described the situation too accurately. The public never saw a picture of humans actually in conference with Kyyra. It never saw Henry Clark in a live television interview, as it often saw Chandragupta Rao. It saw so little of the Kyyra themselves, and only in still news photos, that to many

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people they didn't seem quite real. So it seemed reasonable that if Clark appeared before an actual audience, with live worldwide television coverage, the gesture would help dispel the impression that he was trying to hide something. And if one or more of the Kyyra could be present too, so much the better.

On the day of the show, as Clark watched the gathering crowds and camera crews from behind the scenes, he had second thoughts. He tried to dismiss them as mere stage fright, but he knew they were more than that. In the week since the sabotage attempt, violent emotions on all sides of the question had been much more openly displayed in spots all over the world. The overflow crowd now swarming into the grandstand that had been improvised in a corner of the spaceport was noisy. To Clark it looked uncomfortably like an explosive mixture—and he wasn't sure what it would take to set it off. He was glad he had had the foresight to insist that Beldan be placed in a protectoglass dome at the side of the stage, despite his objections.

For a moment Clark wondered again about those objections. When he had mentioned that he would explain the dome by saying that the Kyyra needed protection from the local atmosphere, Beldan had immediately said, "But I don't. Why should we tell them I do when I don't?" There was so much Clark didn't understand about the Kyyra. Could a culture really shape its members so that they found violence and deceit as incomprehensible as Beldan claimed to? What *kind* of a culture could do that?

The time came. Clark strode out onto the stage, shaking in his shoes even as he made his gait project confidence and strength. Polite applause greeted him and died quickly. Just in front of the stage, a long row of commentators and interpreters sat in glass booths with microphones and headsets, poised and waiting eagerly for his first words. He cleared his throat and began, "My friends, I come to you today to talk about a matter of serious concern to all of us—perhaps the most serious any of us has ever faced." The interpreters, keeping their eyes glued to his face, spoke rapidly into their microphones in thirty languages—all of them silent from where Clark stood. "First allow me to introduce a very distinguished visitor. You have all seen his picture in the news: none of you has seen him in person before. Being unaccustomed to Earth, he must be especially careful while visiting us. That is why you see him now enclosed in a dome. It is my pleasure to present Beldan, ambassador of the Kyyra." He gestured and Beldan stood. The audience responded in a strangely nonhomogeneous way. Isolated pockets of people clapped and cheered wildly; one group sang a hymn. Others stood with arms

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folded and stared stonily; still others gave a few seconds of perfunctory applause and then stood waiting. When it all subsided, Clark said, "Both Beldan and I will be happy to answer questions when I have finished my opening remarks." *Some questions, anyway,* he thought tightly.

"You all know why Beldan is on Earth. To put it as simply as possible, Earth is in danger because our galaxy's core has exploded. The Kyyra have offered to help us escape the danger. But we must not leave it in such simple terms. It is vitally important that every one of you understand exactly what the danger is and what courses of action are open to us. Let me review things which many of you already know . . ."

Briefly but thoroughly, he outlined what the core explosion would mean to Earth, what the Kyyra offer entailed, and what could be done if the offer were not accepted. Sometimes he had to pause for a burst of scattered applause or a wisecrack from a heckler; in each case he waited patiently and then went on. He pulled no punches. He made it very clear that any of the choices would involve, at best, great discomfort and sacrifice.

"And perhaps the saddest part of all," he finished, "is that we all have to live by the same decision. The decision will actually—formally—be made by your political leaders. But once it is made—no matter which choice is taken—we are all going to have to work together as we have never worked together before. That is why I am asking you today to give these matters your most careful thought, so that when we make our decision we can do so with confidence that it reflects your wishes. Sabotage attempts accomplish nothing. Persecuting your neighbors who disagree with you accomplishes nothing. *Thinking* may accomplish something.

"I hope that after you have thought, we can all agree on our choice. But if we cannot, I hope that all who disagree with the decision will resolve to cooperate fully in carrying it out—because there will no longer be any alternative. And as I said, whichever option we take, we are going to have to cooperate to make it work. The main difference I see is that one choice keeps open the possibility of life somewhat as we know it for our descendants; the other involves fewer unpredictable risks but allows only underground hiding for a longer time than any of us can imagine.

"There is one final point. We are going to have to make our decision soon—within a few days if at all possible. Because our Kyyra visitors will not be able to wait much longer—"

"What do *they* want?" a heckler yelled hoarsely from one of the

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front rows. Another joined in, "Yeah, what's their angle?" "Quickly, frighteningly, the scattered shouts grew into a general angry roar of people shaking their fists at the stage and trying to be heard over the din. Clark held up his hands to beg for order, but the tumult just swelled even faster and his vision of consensus shattered into tiny fragments that would never go back together again.

Then two gunshots rang out from the audience, almost simultaneously and from nearly opposite directions. Something smashed into Clark with a tremendous surge of blinding pain.

Everything else was lost as the stage dissolved under his feet and the world turned black.

XIV

Rao was on the air within two hours after the shooting. "I cannot overemphasize," he said, looking earnestly straight into the camera, "how much I deplore this afternoon's unfortunate incident. Any civilized person would agree that there is no excuse for this sort of unthinking violence. We can be thankful only that the injury to Lieutenant Commissioner Clark was not as serious as the offense.

"However . . . we must not allow our outrage at this barbarism, or our sympathy for Mr. Clark, to blind us to the seriousness of the issue that prompted him to speak. We must not forget that the question of whether or not to accept the Kyyra offer deeply touches the life of every one of us—including me and *you.*" He pointed dramatically, straight at his viewers. "We must not forget that Mr. Clark's committee—despite having had some three months to study the problem—has utterly failed to answer the question of why the Kyyra are making this offer.

"Now we are told that the decision must be made within a few days. I urge you as strongly as I can: *do not* let this decision be railroaded through. We cannot afford to decide on this offer until we *know* why they are making it. They must have a reason. I urge every citizen to *demand* that our leaders find out what it is—and do not accept any decision until your demand has been met!"

People heard him and listened. Panic had begun to develop, now that something like a deadline had been announced and violence had reached high places. In popular opinion, a muddy logic shifted blame for the shooting from the anonymous humans who pulled the triggers to the Kyyra whose presence somehow lay behind the whole web of events. Telegrams and phone calls began to pour into the UN, the Science Foundation, national governments, and Kennedy Spaceport. Some demanded that the Kyyra offer be accepted; others demanded just as loudly that it be rejected. But above all there

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was a rising clamor of demand that the Kyyra motives be clarified, and fast.

Little of that reached Clark at first. He was hospitalized at once, and for over twenty-four hours he was allowed neither visitors nor news. So he had a lot of time to kill with few distractions other than the pain in his right shoulder, which tended to become overpowering in the last hour before he got another dose of painkiller. Then when he got it, the drug tended to make him so drowsy that he fell asleep. But the sleep was hardly refreshing. It was too full of those dreams of Dianne listening to him and not being able to speak—and they got worse rather than better. In one of them, in the middle of the night, she listened and didn't even try to speak, but just turned and walked away while he was in the middle of a sentence. In another, he was back there giving the televised speech and suddenly Dianne stood up in the front row, pointing at him and laughing uproariously.

He woke in a cold sweat, afraid to go back to sleep. Intellectually he knew it was only a dream, of course, but some dreams can plague the sleeper long after he is awake. This one took him quite a while to get reasonably well out of his thoughts, and it might have taken longer if it had still been dark. Instead it was a bright morning and the sunshine flooding through the window encouraged him to stay awake and think about reality.

During the times when the drug was starting to wear off—when he was awake but not yet hurting too badly—he could do that fairly well. He thought a lot about things he had done and might have done differently—his failure to keep tight enough security on Rao, his silent suffering as Rao propagandized during the last several weeks, his tragicomic attempt to bring people together by an appeal to reason. Maybe instead of that he should have just made his own decision and then used Rao's own tactics to make the people accept it. Or maybe . . .

But of course there was no point in dwelling on what he might have done. The only question that really mattered was, What could he do *now?* Gradually he banished the past from his mind and refocused his attention on the immediate future. Very slowly, some possibilities began to crystallize.

In the evening visitors came—Joe Sanchez and Jonel Turabian. Clark was feeling fairly good then. They had caught him in the right part of the drug cycle and he was beginning to feel some slight satisfaction with his thinking. His first reaction when Joe and Jonel walked into his room was to look at them, frown, and ask, "Where's Sandy?"

"She's with Beldan," said Jonel.

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"Trying to explain to him why things like this happen." He took one of the two chairs in the room, hauled it over next to the bed, and sat down. Sanchez took the other.

"I wish she could make him see why people are making all the fuss about their motives," Clark muttered gloomily. "Well, anyway, I'm glad to see you two. Thanks for coming. What's the news in the outside world? They haven't let me hear any all day."

Sanchez shrugged. "Rao the Rabble-Rouser was at it again, as you might expect, trying to bring the motive question to a head. Meanwhile, the investigators have had a little more luck with your shooting than they did with the guy who tried to blow up the Kyyra shuttle. Maybe you should feel flattered. It isn't everybody who gets to be the target of two independent assassination attempts at the same time."

"Flattered or flattened?" Clark mused. "Independent, you say. They've established that?"

"Pretty well." Sanchez reached for a cigar, thought better of it, and withdrew his hand. "They caught one of them. He was the one who missed you. A bad shot, a crackpot, and a lone wolf with no apparent connections with anybody. Young fellow named Franklin who apparently had some confused idea that you were going to give up our one chance at escape. He thought if he could get rid of you, somebody else would take over with strong reins and make sure we didn't miss out. Don't know who he had in mind. I don't know what's going to happen to him, either. I wouldn't be surprised if he wound up in a loony bin."

"And the other one?"

"Nothing quite so definite there. Nobody in hand who we know did it: A few possible suspects, and some hints that it was part of a plot."

Clark's eyebrows rose slightly. "A plot? By whom?"

"Not certain. The investigators won't even tell me what the clues are. But they've uncovered a conspiracy by a group that wants nothing to do with the Kyyra offer and is afraid you're determined to accept it. It's not too hard to see why they think that. You've been entertaining Beldan for a long time—and some of your remarks yesterday seemed to lean that way."

"Did they? I thought they were very impartial."

"Some of us didn't hear it that way. Anyway, they suspect a connection between that group that's trying to stop you from what they think you're going to do, and the guy who shot you. And that's where we stand now. Further studies are in progress, as they say in the journals."

"I see." Clark shut his eyes and thought for a few seconds. His shoulder was starting to hurt again. "Is Rao in on this?" he asked

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suddenly, opening his eyes.

"We don't know. It seems hard to believe, but I suppose it's possible. All we know about him is that he's been very openly and vocally against the way you've been handling things and he has a strong personal preference for not accepting the Kyyra offer. And he's built up quite a following. Thanks to his latest effort, everybody's in a hurry and the motive question is the issue of the day. Everybody wants an answer, no matter which side they're on."

"I don't suppose you've seen any new polls, have you?"

"Yes, there was one that came out this afternoon. Hastily done, and started before yesterday afternoon, so it's hard to judge how reliable it is or how much effect either you or Rao had on it. But it does show a shift. The percentage in favor of going is down to twenty-five."

"It shows something else, too," Jonel added. "They asked people if they might change their minds if they had the answer to the motive question. A sizable number in both groups said they might, depending on what answer the Kyyra might give."

Clark closed his eyes and nodded slowly. "Does Beldan know about all this?"

"Sandy's mentioned it to him. He still says he can see no relevance to the question and he can't wait much longer for a decision."

Clark, his eyes still closed, frowned. "It's really odd," he said. "Maybe he really considers it irrelevant, but I find that hard to believe. Anyway, they do have a seller's market. There's nothing they need from us, or they'd be willing to make that much of a concession to get it. It doesn't matter to them whether we accept or not. But if they don't want anything, and they're so callous that they'd withdraw their help just because we want to know why they offer it—why offer in the first place?"

"Maybe," said Sanchez, "they don't answer because their motives are something they have to hide from us."

"Maybe," said Clark. The possi-

ANSWERS TO QUIZ ON PAGE 137

REFERENCE: "Dunlop's Illustrated Encyclopedia of Facts"

1. ants 2. bells 3. horses 4. dreams 5. fire 6. muscles, 7. stones 8. sun 9. trees 10. thunder, 11. blood 12. glands 13. rivers 14. eggs 15. flies 16. liver, 17. pollen, 18. fingers

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bility was real, but seemed small—and he didn't like to think about it. "But that doesn't make sense either. If it's obvious that we desperately want to know a motive, and they don't want to tell us the real one, why don't they just make up a phony one to shut us up?"

"Maybe they really never lie."

Beldan did try to give that impression. But could it be taken at face value? Trying to talk out the question, Clark found himself growing more confused than ever.

Jonel said, "All I know that seems important right now is that if we don't answer soon we may blow our chance. Motives are the key controversy on Earth. If we could clear them up, everything else might become a lot more clear-cut. So what we need right now, more than anything else, is a way to get them to answer that."

Tell me something I don't know, Clark thought acidly, but he said nothing. For a while none of them said anything. Clark opened his eyes and studied the other two men's faces.

Sanchez looked especially thoughtful, staring at an irregularity in the wall finish in a corner of the room. Finally he said, "I know one thing we might try."

Clark allowed himself no enthusiasm whatsoever. "Yes?"

"Sandy Turabian has more of Beldan's trust than any of us. Maybe you could get her to ask him."

"I've tried it," Clark said. "She said she wouldn't spy on him."

"I'm not suggesting that she spy on him. I'm suggesting that she ask him a straightforward question. And try to make him understand why the answer is important to us, which is what none of us has been able to do."

Clark thought silently for half a minute. He didn't expect her to agree, and he wasn't even sure she could do it. But he had said weeks ago that if anybody could do it, she could. He still believed that, and at the moment he could think of nothing else that had any chance at all. He looked at Jonel, almost pleadingly. "Maybe if you talked to her, Jonel . . ."

"I'll do it," said Jonel, standing up. "And I'll do it right now, so you can talk to her too, if necessary."

There was a phone in the room, on a table temporarily kept out of Clark's reach. Jonel walked over to it, punched out his apartment's code, and waited.

And waited.

After a full minute he hung up, frowning. "I don't understand that," he said. "She didn't say anything about going out. I'd better go check up on her. Take it easy, Henry." He grabbed his light jacket and went out hurriedly.

The apartment was deserted.

Everything—furniture, decorations, lights—everything was as it

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should be, but there was no sign of Sandy or Beldan. Not yet really alarmed, but with a growing prickling sensation that something was not quite right, Jonel went through the whole place, looking on and in all the furniture for any note Sandy might have left to tell him where they were going.

He found nothing. And then he began to worry. It would not be like Sandy to leave voluntarily without leaving a message.

He tried to call the Kyyra quarters. No answer.

He called the spaceport headquarters. "This is Jonel Turabian," he said as soon as he was connected. "I was just trying to call Beldan in his quarters but got no answer. Can you tell me where he is? And while we're at it, do you happen to know where my wife is?"

"Hold on a moment, sir," said the voice at the other end, "while we check your voiceprint." Jonel frowned. Voiceprints were never checked except under very special circumstances when security was at stake.

A minute later the voice was back. "Thank you for waiting, Mr. Turabian. I don't know where your wife is, but all three of the Kyyra have vanished. And so has their shuttle."

TO BE CONCLUDED

do you know your scientific experts?

by JOSEPH STACEY

A COLEOPTEROLOGIST is an expert on "beetles," while an expert on "light" is called a PHOTOLOGIST.

Listed below are 18 other such scientific experts. Can you *underline* the expert's specialty in each instance. Twelve correct answers is a passing score; 13-to-16 is good; while 17-18 entitles you to be classified an "expert."

1. MYRMECOLOGIST ants/lizards/snakes
2. CAMPANOLOGIST shells/odors/bells
3. HIPPOLOGIST horses/bees/spiders
4. ONEIROLOGIST fever/dreams/weather
5. PYROLOGIST fire/water/air
6. MYOLOGIST teeth/bones/muscles
7. LITHOLOGIST caves/stones/fossils
8. HELIOLOGIST moon/sun/stars
9. DENDROLOGIST mosses/trees/flowers
10. BRONTOLOGIST thunder/clouds/air
11. HEMATOLOGIST bones/heart/blood
12. ADENOLOGIST larynx/spleen/glands
13. POTAMOLOGIST deserts/rivers/caves
14. OOLOGIST eggs/fruits/wines
15. DIPTEROLOGIST flies/spiders/wasps
16. HEPATOLOGIST kidneys/liver/spleen
17. PALYNOLOGIST pollen/seaweed/fungi
18. DACTYLOLOGIST hair/fingers/head

answers on page 135

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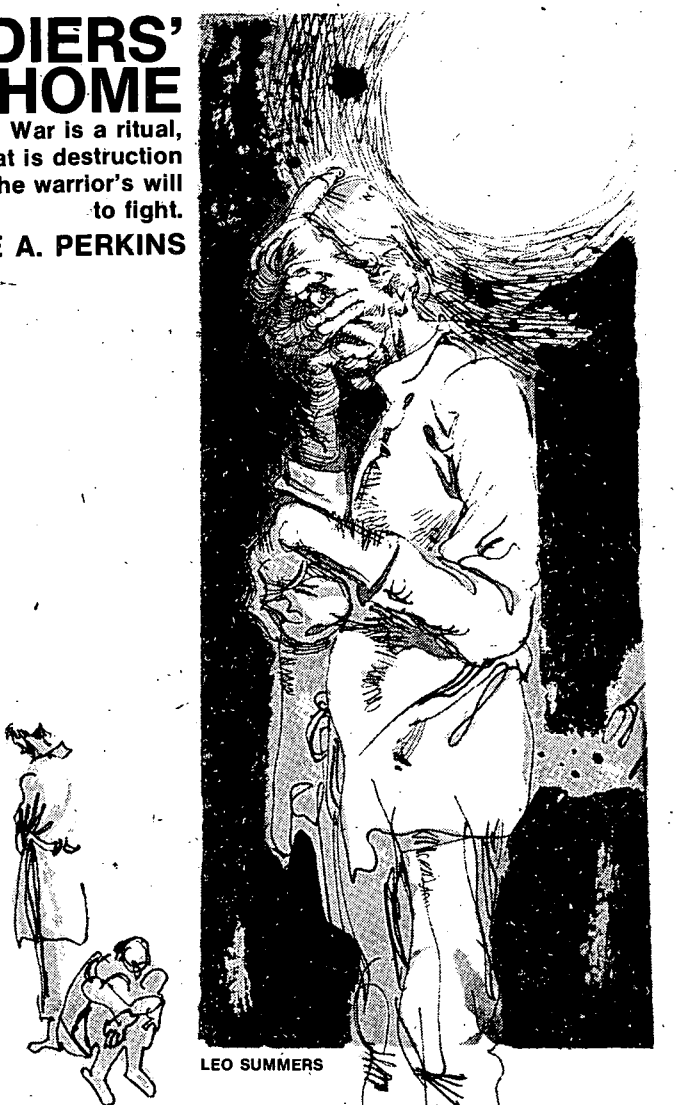
SOLDIERS' HOME

War is a ritual, and defeat is destruction of the warrior's will to fight.

LAWRENCE A. PERKINS



LEO SUMMERS

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Anthony Randolph, late a cavalry lieutenant in Mosby's Rangers, gloomily stared at the scuffed toe of his left shoe in a late afternoon sunbeam, feeling trapped and helpless. Damn! Five years—five bloody, hazardous years—of sacrifice, rigor, hunger; five years of seeing his men wounded, killed, even hanged by that Yankee devil Custer, just so that he could sit uselessly in this stupid room watching a mindless sunbeam creep over his foot. Damn, damn, damn!

But the Yankees must be watching for him, and this little room was at least safe. The Yankees must know that he had been Johnny Reb, that he had been an officer in the only guerrilla force that had ever really hurt them. They had hanged captured Rangers when the outcome of the war had still been uncertain, stopping only when Mosby had hanged an equal number of Yankees. Now that the Yankees had won, what would they do to Randolph if they could find him?

And how had he gotten into this room? There had been the mustering out at Salem twelve days after

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Lee's surrender at Appomattox Court House—if Lee had surrendered, who else could carry on?—and his next clear memory was of his sitting on this plain bunk, in these peculiar clothes, talking to Miss Stimson.

He had not understood her because there seemed to be a tough, resilient barrier in his mind that bounced back what people said even before they said it. But she had asked him some simple, direct question that he had answered. She had been so pleased that he had tried to answer her next questions very carefully, hoping that she would be pleased again. Miss Stimson was nice. But he wished now that he had asked her then about his being in this room, this tiresome room, this little prison.

He did ask about his little room now, as directly as he dared, but Miss Stimson never gave him an answer that he could understand. A strange masked feeling, as though he had just awakened and had not yet quite understood the messages of his senses, hovered over him. Had the Yankees, notwithstanding Miss Stimson's disclaimer, had him put in the little room? Miss Stimson answered his questions volubly, but the resilient barrier in his head muffled the answers, wrapped them in cotton. What was wrong with him? He shook his head and wondered.

Miss Stimson swore that the Yankees had not put him in the room and that they could not get at him there—that much was clear—but something bitter in her assurances somehow made him distrust them. He had been one of Mosby's Rangers and he was in enemy country now. *Careful,* he warned himself. It's hardly possible to be too cautious, too careful.

Well, he would be careful—but at least he could relax in the safety, the peace and safety, that the little room offered after five years, five horrible years, of dirt and danger and deprivation. *Peace,* he reassured himself, wondering why the innocent word made him feel so tense and guilty. Surely this *was* peace—the safe little room, the good food, the pleasant people like Miss Stimson that he could talk to. He thought of all the watching people as misstimsons, but of course his Miss Stimson told all of the other misstimsons what to do. Surely they could keep any dangerous Damn Yankees away.

There were also the dwellers, the men who wore clothing just like his. He saw them at mealtimes and at the social sessions, and he supposed that they all had nice little rooms just like his. He enjoyed talking to the other dwellers, except that he had to be so very careful because of the Damn Yankees.

And there was yet another category. Alarmingly hidden in the background were The People, except that they were in charge of everything here and even Miss Stim-

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son paid them homage. Randolph constantly brooded about The People, wondering if they had any connection with the Yankees. If they did, his tidy little room was not at all safe. Therefore he never quite trusted Miss Stimson, although he longed to trust somebody and Miss Stimson certainly was nice.

One of the dwellers that Randolph noted at table and saw fleetingly during the social sessions impressed him strangely. He was a rangy youth with brown hair and a full brown beard and mustache, but Miss Stimson and her misstimsons always somehow prevented him from speaking to Brownbeard. Randolph increasingly felt frustrated as the impotent and meaningless days passed, and wondering what elusive thing about Brownbeard so appealed to him was almost as cankering to his spirit as not knowing how he had gotten into this peculiar place—although he enjoyed the good, plentiful food, and Miss Stimson was nice.

The social sessions took up most of the afternoon, and they seemed very strange to Randolph. The dwellers were carefully arranged in pairs or larger groups to do things or just to talk, although only the misstimsons seemed to understand the etiquette. Some of the dwellers tended to sit exactly where they had been put and others were incapable of sitting still at all. Some seemed never to speak at all and some chattered constantly.

Randolph felt uneasily certain that the whole thing must have been set up by the Yankees. At her last visit—interview, conference?—Miss Stimson had gotten suspiciously angry in denying that the Yankees, the Damn Yankees, were involved in the program. Probably the Yankees had told the misstimsons how to identify anybody who had served with Mosby, especially anybody who had been an officer under Mosby. Randolph reminded himself again that it was impossible to be too careful. Those Yankees, those Damn Yankees, could be anywhere!

For this social session Randolph had been paired with one of the silent dwellers—a neutral, average sort of person except that he sat absolutely motionless on the other end of their sofa—while the misstimsons discreetly watched. The misstimsons always watched him. They always watched everybody, everything, everywhere. What were the Yankees, the sly, secret, hidden Yankees (damn them!) expecting from this absurd encounter? Randolph decided to play as motionless as the other man and then noticed Brownbeard heading for the men's room. Instantly Randolph decided that he might as well respond to the same urge.

As Randolph washed his hands he diffidently approached Brownbeard. "Peace, friend, but

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don't I know you from somewhere? Haven't we met?"

Brownbeard eyed him suspiciously. "Can't say as we have."

Brownbeard spoke in a Tidewater accent, and Randolph suddenly felt more strongly than ever that he should know this man. "You're from Virginia, aren't you? I live—I used to live—in Alexandria. My name's Randolph. Anthony Randolph."

Brownbeard's eyes lit up. "Yeah, I'm from Alexandria too. Could be we ran into each other some place." He extended his right hand. "Name's Murphy. Call me Jack. Say, Tony, d'you suppose . . . ?"

Just then one of the male misstimsons burst through the doorway in a flurry of anxiety. "Ah, Murphy, there you are! Arple wants to challenge you to a chess game. He says you beat him unmercifully yesterday, and he wants revenge."

Murphy must be afraid of the Yankees too, because he quickly began avoiding looking directly at Randolph. "Yeah, if he wants to get beat again. Sure." Murphy swaggered out of the men's room closely followed by the misstimson, who even more carefully avoided looking at Randolph at all.

So the Yankees really were watching him, and Miss Stimson had lied! Well, he expected nothing but lies, but he had almost begun to trust Miss Stimson. If you had been with Mosby you just couldn't be too careful. Murphy must know something that the Damn Yankees were trying to hide from him. Wondering what to do about this fresh danger, he idly glanced up at one of the lamps and froze. Was that little glass bulb really a lamp? And was a lamp really as bright as that?

Randolph struggled to sort out his memories. He had seen a lamp as bright as that—a mantle lamp—somewhere, hadn't he? But when, and where? He stared at the shining bulb again and then turned his dazzled eyes away. If that thing was a lamp, how did it burn? Lamps and lanterns had to have an air intake at the bottom and a chimney at the top, didn't they?

Holding his right hand over his right eye and closing his left eye, he made a careful crack between two fingers and stared at the bright thing. Yes, it was a pear-shaped piece of glass with no visible openings anywhere. Staggered, Randolph returned to the hall of the afternoon sessions looking for the first time to see where the light came from.

He looked up and was more shaken than he had been at seeing a lamp without airholes. Some of the light came through windows glazed with improbably huge panes, but on the ceiling there were clusters of glowing tubes as long as his arm. Great God! If the Damn Yankees had been able to develop such technical marvels, no wonder

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that they had been able to force Lee and Mosby to surrender!

For a moment Randolph felt a moderation in his sense of guilt at having failed Mosby and Lee and old Jeff Davis, but the warm feeling of justification faded at once. Where had this marvelous Yankee science been during the war? Sure, there had been the Minié ball and the chain shot, although the chain shot had been a spectacular failure. But a technology that could produce lights like the ones above his head should have been able to wipe out Mosby and the whole Confederate army in a week or two. Why had it taken them five bloody years?

Randolph dazedly wondered when he had seen that mantle lamp. He remembered it clearly—the two mantles under the protection of a glass shade looking like a pair of incandescent teabags, the compressed air gently hissing, the room reeking faintly of burnt gasoline. He remembered filling it and then pumping air into the tank with the little hand pump that came with the lamp.

His memory could see and smell and hear the lamp, but when and where had he pumped air into the little tank until the building pressure had begun to make the pump strokes feel spongy? Surely not with Mosby, where the usual illumination at night was a guarded campfire, a solitary candle in a safe room or cave, or the light of the full moon. Where, then, had he seen and smelled a mantle lamp?

Had it been before the war? Randolph suddenly realized that not once since he had become a dweller had he thought of his life before the war; and when he tried now to think of it, it was disquietingly vague. Light after sundown? He conjured up vague images of roaring fireplaces and banquet tables studded with ranks of blazing candelabra, uneasily aware that not every night could have been a Yuletide feast and that even after a feast he would have had to make his way to bed alone or with a suitable companion. How had he done that in the dark?

Across the room Brownbeard—was his name Murphy?—was setting up a chess game against a cringing opponent who had challenged him to a rematch. Randolph shook his head, not feeling entirely awake. How did he know that Brownbeard's name was Murphy, or that the cringing opponent was supposed to be the challenger? There was, he admonished himself, something peculiar about this whole vast hall—and never mind the impossible illumination. *What's the matter with everybody?* Randolph wondered. *And even more to the point, what's the matter with me?*

Randolph dreamily found his way back to the sofa where his social partner of the afternoon sat in the same moveless attitude, feeling

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impeded as though he were wading through waist-deep water. He thought briefly of wading to a shallower place, but there was no other destination to which he could slosh his way—and the misstimsons were watching, always watching, eternally watching.

Randolph considered resuming his duel of motionlessness with the other dweller, but he had conceded that match by going to the men's room. Boredom forced him to try to prod his hulk of a companion into speech or at least into some human sign of recognition. Randolph had absolutely no success and finally, feeling like a fool, he lapsed into his own silence and began watching the other people in the impossibly illuminated hall.

Chess is usually a deliberate game, but the match between Murphy and Arple seemed to be going quickly. Murphy had the black pieces, and most of the captured pieces removed from the board seemed to be white. Randolph could see nothing of Murphy but his back, but Arple's face was pale and drawn. And then Randolph saw Miss Stimson standing in the corner of the room farthest from him, watching the chess game. Instantly he sprang up and strode toward Miss Stimson. She retreated a few paces and then stood firm, waiting for him.

"Mr. Randolph, you are supposed to be entertaining Mr. Bradley."

"Entertain? Hell, Bradley wouldn't notice if I fired a musket at him." Randolph breathed deeply several times to gather and concentrate his fury. "You lied to me."

Miss Stimson retreated another pace. "I—lied to you?"

Randolph breathed deeply again because the ordinary air seemed to be unable to support his burning rage. "You told me the Yankees didn't put me here. I go to the washroom and meet a man from Alexandria, Virginia." Randolph glanced at Murphy and noted that the chess game was over; Murphy had won and Arple had only a few pieces left on the board whereas Murphy had lost only four or five.

"I go to the washroom and meet Jack Murphy from Alexandria, Virginia, and one of your people comes rushing in and snatches him away from me. Bam, just like that. And I'm supposed to believe that the Yankees aren't watching me!"

Miss Stimson thoughtfully nibbled her lower lip. "I give you my word that the Yankees have nothing at all to do with your being here." She nibbled her lip again. "Murphy will tell you that he was one of Mosby's Rangers. All right. I'll have Arple paired with Bradley, and you can talk to Murphy as much as you want. Will that satisfy you?"

"I certainly do want to talk to Mr. Murphy. Maybe he can satisfy my curiosity on a couple of points. And after all, both of us are from

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Alexandria, Virginia, and that's a very small town."

A few minutes later Bradley was inertly sharing the sofa with an outraged Arple while Randolph and Murphy suspiciously strolled back and forth along a wall of windows, as far away as they could get from everybody else. Murphy had been greatly agitated at first when Randolph had addressed him as a Mosby Ranger, but had calmed down when Randolph had identified himself as a fellow Ranger.

The two men had almost identical memories of their lives as Mosby's Rangers except that neither of them could remember having met before their brief encounter in the men's room. Well, Mosby's Rangers had been very loosely knit, and not all of them had necessarily known each other. Both men began to relax, suspicious only of the other people in the hall and of the ubiquitous Yankees.

Randolph gazed through a huge window at the far horizon. "I just hope that Mosby managed to slip away. With hair redder than mine and being even taller than I am, he might have trouble slipping through to some safe place."

Murphy, who had been pacing in step with Randolph, froze. "Have the Yankees set you on me?"

Randolph also froze and turned to face Murphy. "What the hell do you mean by that?"

"Mosby has dark brown hair, darker than mine. And he was just my height. Whoever told you that he had red hair must have . . ."

"Now just you wait a God-damn minute! Nobody needed to tell me anything about what Mosby looks like. I've talked to him hundreds of times, standing as close to him as I am to you right now." Suddenly Randolph remembered that Miss Stimson had told him that Murphy had been a Ranger. No, she had said that Murphy would say that he had been a Ranger. He blinked, wondering if he was really awake, but furious. "I suppose it was Miss Stimson that put you up to this, and I see now that the Yankees must be using . . ."

The men lunged at each other and suddenly half a dozen misstimsons were there, holding them apart, quickly trundling them off to opposite ends of the great room. At his end Randolph found Miss Stimson, who was nibbling her lip again.

"Now you know why we didn't want you to talk to Murphy."

Randolph, who had been furiously but ineffectively struggling with his captors, suddenly relaxed in confusion. Was he really awake? He had been ready to fight to the limits of his endurance for the right to talk to Murphy, but Miss Stimson had told him to talk to Murphy. The resilient barrier in his mind seemed to relax in his skull as his muscles relaxed in his body, and he shook his head in an effort

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to clear his thinking. "I'm confused."

Miss Stimson gracefully sat down at one end of a sofa and patted the other end. "Sit down and tell me about it." Miss Stimson was very nice, and the hands that had been restraining him relaxed. Randolph plumped himself down on the exact spot that she had patted.

"I was just beginning to wonder about the lights when I met Murphy." He described his bafflement at the pear-shaped bulb in the men's room, his scanty recollections of mantle lamps, and his confusion upon noticing the long, glowing tubes like the ones directly over his head now. Miss Stimson looked at him with an expression of pity that distressed and frightened him.

"The Civil War ended in 1865, right? The mantle lamp was invented by Carl Auer von Welsbach in 1885—and I wouldn't have known that so patly if this thing hadn't come up before. You aren't allowing yourself to remember electric light because that's too recent, but mantle lamps are safe—if you don't know when they were invented, of course."

She sprang abruptly to her feet. "You were standing at the window when you talked to Murphy. Did you look down at the street?"

"Down at the street?" Randolph felt vaguely terrified. Something in him dreaded looking at the street, the world outside. "No, I didn't."

"Then come with me now and look." She kept talking as he reluctantly rose and followed her because she had asked him to and she was so very nice. "You told me that Alexandria, Virginia, is a very small town. I live in Alexandria, and the last census figures reported a population of more than two hundred thousand. This building, by the way, is in Anacostia—Southeast Washington, D.C. Now—look down. Go ahead, look. That's the Anacostia Freeway."

Randolph looked dizzily down. He had stood at this very window only a few minutes ago and had somehow avoided seeing anything of this grand prospect but the anonymous horizon and the everlasting sky. Two enormous buildings, neighbors, two gigantic towers were all of fifty stories tall. Randolph guessed that he must be peering from the middle stories of a third identical giant. Beyond the towers and not far from the ground wound a white ribbon upon which swarmed wheeled vehicles of various sizes. Somehow he knew that most of them carried human cargo, and that if he were to stand near them he would be deafened by their full-throated roaring.

Miss Stimson was speaking to him again. "Did Jack Mosby ever ride in such carriages? Or Jeff Davis either, for that matter?"

The answer was obvious, but Randolph stood in stunned silence. A small red roarer with an ivory top appeared on the white ribbon

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and Randolph uncannily felt that he had once owned such a thing himself and that he knew exactly how to operate it.

Miss Stimson firmly grasped his right elbow and steered him back to the sofa, and Miss Stimson certainly was nice. The afternoon session seemed to be over, and all of the other dwellers were gone, but Miss Stimson seemed not to notice or to care. "Forgive me, but we were listening to you and Murphy—that's how we knew when to step in to keep either of you from being badly hurt. And each of you described Mosby as a glorified projection of your own selves."

"We did *what?*"

"Think a minute. You're a tall redhead; your Mosby is an even taller man with even brighter hair. Murphy is of average height and has brown hair; his Mosby is of average height and has brown hair. And both of you were ready to fight to protect your Mosbys. It goes a lot deeper than height and hair, of course. Your Mosby was your ideal dream of yourself—wasn't he?"

Randolph was about to answer when one of The People walked in. Randolph involuntarily cringed and then his eyes that had just seen the light and the roaring vehicles saw that this uniformed man, this soldier, really was not a Yankee. Randolph, who must have known about such things once, eyed the officer's narrow shoulder-board insigne and recognized a lieutenant colonel of the medical corps of a nation that he had never really thought of as an enemy.

Miss Stimson spoke in a language that Randolph might have recognized if he had strained at it; because he had learned necessary words and phrases in a crash course as part of his army training. And for a blazing moment Anthony Randolph, late an infantry lieutenant of the United States infantry, remembered all about electric lights and who he and Jack Murphy were and how to drive his '79 electronuke red sedan with its classy ivory top.

He had decided late in the Sixties that the senseless, immoral, capitalist, imperialist war in Vietnam was evil and that the establishment was materialistic, corrupt, and degenerate. The Pentagon, lying between Alexandria and Washington—and it lied constantly in the press and on television—was the embodiment of the hateful military-industrial complex. The basic issue was simple, wasn't it? American bombs and napalm were killing little brown babies and rendering a whole nation uninhabitable.

Randolph had been in all of the local antiwar demonstrations, and after some thought he joined the Students for a Democratic Society. And eventually, when the SDS had begun to seem too do-nothing to suit him, he had transferred his allegiance to the Weathermen.

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It was as members of the Weathermen that he and his neighbor and close friend Jack Murphy—by then college dropouts and deeply interested in guerrilla warfare in Northern Virginia—had intensely studied everything they could find out about Mosby's Rangers. Mosby seemed to be the only person in history who had conducted successful guerrilla warfare in Northern Virginia.

Beginning with the failed Mayday demonstration in Washington in 1971, there had been a number of attempts by the peace freaks to shut down the government, or at least the damn Pentagon. None of the first efforts had succeeded, although planned riots elsewhere had forced college after college to drop their ROTC programs. And most of the demonstrators who were arrested were released after a day or two in jail while the others got only wrist-slapping fines.

And on Monday, October 5, 1981, an army of demonstrators ably led by seasoned lieutenants like Randolph and Murphy, profiting by all of the lessons learned in all of the earlier failures, made it. They swarmed through the Pentagon, shutting the place down and smashing all of the equipment in sight from pencils and coffee urns to computers and satellite control stations. Other contingents were less successful in closing down the government in Washington, but they provided diversionary harassment and did succeed in wrecking the State Department.

Peace! No more little brown babies would be killed by bombs or napalm.

The young idealists had forgotten one thing. They had forgotten that it takes only one faction to make war, but at least two to make peace. They had forgotten that other nations had watched the United States for years with genuine fear. Within half an hour of the fall of the Pentagon a nation that had sparred for decades with the United States—the nation of the medical corps lieutenant colonel now talking to Miss Stimson—had begun an ICBM bombardment and within five hours had set up four widely separated beachheads manned by a few paratroops, but mostly by men who had landed unopposed in huge troop carriers at American airports, both military and civil.

Randolph and Murphy, who had jeered at the idea that the lieutenant colonel's country actually wanted to expand its political system over the whole earth, spent two days in shock—by then all of Southern California was occupied—before they reported together to an army recruiting station. The line was so long that they had to wait over three hours to enlist. The teeming enlistees contributed to the general confusion, as did the fact that there were not enough ROTC-trained officers to take charge, and

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the war was over by August of 1982. Peace!

Randolph never heard the terms to which the United States agreed, because by then he had retreated into his fantasy of honorable Confederate surrender.

Miss Stimson glanced at Randolph's slack features and turned to the officer in alarm; her command of his language was bookish but adequate. "I wish that you had not appeared just now. I fear that we have lost Tony Randolph again, just as he was beginning to recover."

The officer scowled. "How many failures is this now for this Randolph and the other one? We cannot endure forever the cost of curing these capitalist deviants."

"Four for him and five for Murphy, the other one. I believe that he would have made a complete recovery this time had you not appeared just as he was relating to reality again. This is a most unusual case—two friends who met the same psychic trauma and adopted identical delusions. But both of them have brilliant minds, and I am sure that both of them will be valuable to the Revolution when they have recovered."

Randolph never heard the officer's answer—and, considering the brevity of his crash course, might not have understood it even if he had been able to listen. But Anthony Randolph, late a cavalry lieutenant in Mosby's Rangers, gloomily inspected the scuffed toe of his left shoe and vaguely wondered what the man and woman near him were arguing about in some heathenish foreign language. Nothing important, he decided. Probably nothing at all. ■

THE ANALYTICAL LABORATORY

September 1973

PLACE	TITLE	AUTHOR	POINTS
1.	The Far Call (Pt. 2)	*Gordon R. Dickson*	2.34
2.	Persephone and Hades	*Scott W. Schumack*	2.50
3.	Override	*George R. R. Martin*	2.83
4.	Prisoner 794	*M. Max Maxwell*	3.29
5.	Martyr	*Laurence M. Janifer*	4.21
6.	Crying Willow	*Edward Rager*	5.26

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KELLY FREAS

RONALD CAIN

Morality depends on your frame of reference—and your power!

WEED KILLERS

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"Do you think we should wake the captain?" Baum wondered aloud.

Plast glanced up from his calculation screen, scrapping a bothersome polynomial the computer refused to take.

"Out of P.C.? Baum, you must be tired of living."

"Come on, Plast. You know he's been in there for what . . . six orbits? That's almost twice what any of *us* normally take. We've all been in and out already."

"He's old. Just give him a little extra time—just a little extra rest, that's all."

"The old moss bag."

"Beg pardon?"

"Oh, uh . . . nothing. I was just stretching."

"Oh. Well, we're not in any hurry to go anywhere anyway, so you can just relax."

"That's easy for you to say. You've got something to do. Look at me, I've got to wait till we land."

"Consider yourself lucky, Baum. You've got all the free time you need. Now get out of here and leave me alone."

Baum chuckled mischievously and rolled away with practically unforgivable speed.

"Phyll," he greeted sarcastically, "what sayest thine instruments?"

Phyll looked up unperturbed, obviously used to him.

"Nothing, Baum. A few viruses, some low forms of plant life. No sentience whatsoever. It's as dead as a stump. We could undoubtedly explore it, maybe even live on it, but it wouldn't be worth it."

"Hm-m-m. How's the next one—third one out from the sun?"

"That's what I'm working on now. It seems to be the one we want. Highly evolved life, extremely specialized, well integrated . . ."

"Harrumph."

Baum spun around, *"Ah, and it came to pass that the captain arose from Photosynthetic Communion long enough to . . ."*

"Baum!" Plast had turned in his chair and was leering menacingly at him, trying to stifle him before the captain heard.

"It's all right," Baum laughed, *"the old bark face is going non-telepathic anyway."*

"But still," Plast frowned, *"a little respect."*

"Helmsman!" the captain growled, still groggy and a little disoriented from his abrupt change-over between a complete calm and this seemingly busy chaos. "Give me a readout!"

"Er, ah, yes, sir," Plast stammered, much to Baum's delight. "Equatorial orbit, fourth planet from the sun"—they still hadn't named the system—"perigee approximately . . ."

"Enough!" the captain creaked. "Botanist, identify!"

"Class D planet, sir," Phyll reported. "Low life forms. No sentience."

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"Would you say it is unsuitable for exploration?"

"I would, sir."

"Very well. Examine the next planet in. I will be in my quarters. Baum, let it be recorded that the fourth planet out was deemed unsuitable for exploration."

"Yes, sir," Baum conceded. "And oh, ah, sir? I have taken it upon myself to order the investigation of the next planet in, sir. Seeing as how there was nothing worthwhile below. I hope you don't mind, sir."

"Ahem," the captain paused. "Very wise decision, Ambassador. Botanist, identify!"

Phyll turned around just long enough to catch Baum's nonchalant gaze.

"Class A planet, sir. High life forms, sentience."

"Suitable for exploration?"

"Ideally, sir."

"How soon can you be ready, Baum?"

"Within the orbit, sir."

"Very well, Baum. Proceed. And let it be so noted that the third planet was found to be suitable for exploration, and, inspired by the Prime Mandate of ancient Telion, 'Go ye forth and find,' we set about to make contact with the inhabitants. I'll be in my quarters. Notify me when you're ready."

With that, the captain whirred quietly away on the smooth spongy tires of his mobility unit and disappeared out the door.

"And let it be so noted," Baum mimicked, filling out a few lines on the daily log entry form, adding to the ever-growing history of the ship, and in so doing preparing what would become a supplemental appendix to *The Book* when they arrived home again.

"What's the atmosphere like, Phyll?" he asked.

"It's what we're using on board right now. No problems there. Gravity's a tad less than ours. Try not to get overzealous and spin your wheels too much. You won't have the traction you're used to."

"Do I need a moisture shield?"

"No. There's enough water and it's far enough away from the sun that you won't lose any. I think you can go as you are. Just use the field mobility unit."

"Very good," Baum said as he rushed out the door to transfer to the field unit.

Within a few moments, he returned, barely able to squeeze through the door in the massive chassis of the outdoor mobility unit. His tires, with intentionally large traction-grabbing knobs all the way around the outside, bumped and buzzed across the polished floor.

"Got my coordinates, Phyll?"

"Right here, Baum. I'll put you down in a rather sparsely populated area as usual. No use panicking the inhabitants."

"Remember Gala IV?"

"Shut up and get to the teleporter. I'll tell the captain."

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Baum buzzed out the door, chuckling to himself and almost hitting one of his wheels against the side. Phyll followed him out and turned down the corridor to notify the captain, wondering how Baum had ever been chosen to be the official ambassador.

As rigid in his ways as the captain was, and as senile as he was becoming, he was rather reluctant in hurrying to the bridge. By the time he and Phyll arrived, Baum was telepathically singing so that only Phyll and Plast could hear him.

"Are you ready, Baum?" Plast asked perfunctorily, half intending just to let him know that *they* were ready, and half because the captain might hear him.

Baum uttered what could be described only as a contemptuous laugh.

Phyll set the coordinates and launched, performing routine safety procedures to satisfy the captain.

"Are you down, Baum?" the captain asked via radio.

"I'm down," Baum replied.

"Are you down, Baum?" the captain repeated.

"I'm down!" he screamed.

"Try switching to audio, Baum. The captain seems to be going non-telepathic."

"What did I tell you?" Baum sneered before switching over to radio.

"I'm down, sir."

"Where are you?"

"I seem to be in a vast field of lower plant forms. If I move, I'll crush them. *Nice shot, Phyll."*

"They're extremely low forms," Phyll retorted, "nonsentient. You can roll right over them."

"If you say so."

A few moments passed as Baum obviously set about exploring the vast field in which he found himself.

"I have found a sentient life form," he announced after a relatively long period of silence.

"My instruments say there is nothing of the kind near you. Are you sure?"

"Positive."

"What's its sentience level according to your sensors?"

"Three."

"That's subsentient."

"I know. But I think it registers that low only because it appears to be communing."

"What's it look like?" the captain asked.

"Very much like us," Baum replied, "only bigger. Twice my size."

"That's to be expected with a lower gravity," Phyll broke in. "Is it rooted?"

"Yes," Baum answered. "But no mobility unit is near. Apparently it is stationary."

"Try to communicate with it," the captain ordered, and apparently enjoying the importance of his words, repeated, "Try to communicate with it."

There was a period of silence as

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Baum maneuvered into a more favorable position. Then, telepathically, obviously in an attempt to communicate, he said, *"I humble myself before you, Sentient One."*

Silence.

Then, once again telepathically, he said, *"I humble myself before you, Sentient One."*

Silence.

"Maybe it's nontelepathic," Phyll interrupted. *"Try audio."*

"It wouldn't speak our language," Baum warned.

"Try anyway."

"Very well . . . I humble myself before you, Sentient One."

Silence.

"Try a lower frequency."

"I humble myself before you, Sentient One," Baum croaked, speaking as low as he possibly could.

Silence.

"Try a higher one."

"I humble myself before you, Sentient One," Baum tittered in the highest range he could manage.

Silence.

"Nothing," Baum announced, exasperated.

"What do you think?" Plast asked.

"I think it's ignoring me."

"Maybe it doesn't want to be disturbed," the captain noted.

"Maybe it's nonsentient," Phyll offered.

"Ridiculous."

"It's possible."

"Just very improbable."

"Describe it," the captain ordered."

"Well," Baum began, "it's twice my height, rooted, acceptably broad-leafed, apparently angiospermal, thickly barked—undoubtedly because it remains outside all the time—and judging by our standards, quite old."

"Can you photograph it?"

"Yes, sir. Is natural light sufficient?"

"For our purposes, yes," Phyll replied. "Take a few X-ray shots too. Let's see what's inside."

"All right," Baum affirmed, and after a long period of radio silence, announced, "Done."

"Hold still," Phyll told him. "We're bringing you aboard."

"Agreed," Baum replied, and after Phyll had punched the button and a few moments had passed, he came rolling through the door.

"Here, develop these," he told Phyll, handing him the film. "I'm going to change into my indoor unit."

And as he disappeared out the door, Phyll deposited the film into an out-of-the-way box. The box hummed, clicked, and stopped.

"It stopped," the captain informed them.

"Indeed," Plast agreed.

"Just a moment," Phyll said, wrapping a fibrous tentacle—well, it was actually more of a well-coordinated branch—around the box and giving it an aggressive shake.

It hummed again and spit the

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developed photographs on the floor.

"Damned machine," Baum muttered telepathically as he came through the doorway, rolling on his smooth indoor wheels.

"Baum!" Plast warned, noticing as he did so that the captain seemed oblivious to Baum's entry and comment. *"The captain is one of the Ancients, raised in the Tradition. If he even suspects . . ."*

"Relax," Baum grinned, *"he's as deaf as dirt. Telepathically anyway."* Then, whirring into the captain's view, he spoke audibly, "How did the pictures develop, sir?"

"As you can see for yourself, Ambassador Baum, they are presently seed-scattered all over the floor."

"So they are, sir. Here, allow me to retrieve them." And in so saying, he bent over to pick them up—unconsciously varying cellular water pressure around the circumference of his trunk to accomplish that effect—and sprouted twig-like extensions on the ends of his branches to aid him in the dexterity required.

"Here, sir," he said, straightening up and handing them to the captain.

"Thank you," the captain responded amicably.

Phyll and Plast looked helplessly at each other. Baum grinned.

"It seems to be just as you described it, Ambassador. Was it really that *green?*"

"At least that green, sir."

"Amazing. And that bright?"

"Yes, sir."

"Hm-m-m. It would seem to be a veritable paradise."

"It has more water than even Gutoros III, sir," Phyll asserted.

"Indeed? That's most interesting."

"Look here, Phyll," Plast said, holding one of the X-ray shots. "Doesn't this look a bit strange?"

"Here, let me see that."

"What's wrong?" the captain asked.

"Look at this, sir. According to this, there is no central organization network, no nerve bundles," Phyll paused. "No *brain,* sir."

The captain rolled backwards a bit and uttered an exclamation which, if a translation absolutely had to be rendered, would probably come out something like, "Water feathers and rock point!"

Baum looked incredulous. "That's absurd."

"Maybe. But according to this and what we heard of your encounter, I would say this is a nonsentient being."

"Surely this one is an exception."

"Possibly. The only impulses we could pick up from it were primitive tropistic tendencies. There is no awareness there. No conscious processes."

"That would make it a bit difficult to talk to, wouldn't it, Baum," Plast taunted nonvocally.

Baum ignored him. "But there

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must be others. We picked up other sentients."

"That's right, we did," the captain agreed.

"There *are* other sentients. Millions of them. My instruments fairly screamed of them. We'll just have to send Baum down again. This time right next to one."

"That's logical," the captain said. "How soon?"

"It'll take me a good three orbits to find a well-isolated sentient. I suggest Baum take that time in P.C. to . . . er . . . prepare himself. I understand those field units can be pretty tiring."

"Point well taken," the captain snapped. "Baum, report to Photosynthetic Communion until you are called for. Phyll, prepare the coordinates. And Plast, execute any orbital changes necessary for us to be in the most advantageous position for observation by the time we send Baum down."

"Yes, sir," they complied simultaneously, whirring out the door, to the controls, or to the sensors, according to their orders.

The captain stood gazing at the bleak red planet the monitor showed was still beneath them. "Meanwhile," he told them, "I'll be in my quarters," and in so saying, whirred cautiously out the door and down the corridor to his room.

A while later, Phyll roused Baum by turning off the artificial sun. Baum came rolling out of the Communion room with some of his leaves not yet fully retracted and smudges of nutrient soil clinging to the base of his trunk where his roots disappeared into the metal mobility unit. He was grumbling, telepathically of course, and rendering all sorts of curses and degrading accusations upon whoever had done such an unspeakable thing as he changed over to the field unit. Phyll and Plast, allied for mutual security, remained quiet, refusing to say which had done it and grinning slyly whenever he turned his back.

"Are you ready, Ambassador Baum?" the captain asked, already in the bridge, noticing none of their byplay.

"Er, yes, sir," he stammered.

"Pull yourself in, Baum," Plast advised telepathically, *"you look like mulch."*

A shiver ran up his cambium layer as Baum sneered at him menacingly.

"Prepare to send down!" the captain announced.

Phyll punched the coordinates while Baum buzzed down to the teleporter.

"Are you ready, Baum?"

"Yes, sir."

Phyll pushed the button.

"Where are you, Baum?" the captain asked.

"I, uh . . . seem to be in a densely populated region, sir. Surrounded to be exact."

"Surrounded?"

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"By hundreds of thousands of tree-folk. Phyll, where's that *well-isolated* sentient you promised?"

"I swear to you, Baum, there is only one sentient down there besides yourself. And it's still quite a distance away."

"Are you sure?"

"Positive."

"Well, I'm right smack in the middle of a swarming metropolis."

"What's your sentience reading?"

"Nothing higher than three."

"My instruments say the same thing here."

"Then something's wrong. I am less than ten branch-lengths from hundreds of them."

"Describe them!" the captain bellowed.

"Big," Baum gaped. "Ten times my height and five times my width."

"Water feathers . . ." the captain began.

Baum continued, "They're all rooted, gymnospermal, and their photosynthetic apparatus seems to be by way of billions of needles—no true leaves at all."

"Rare, but not unheard of," Phyll interjected.

"Try to communicate!"

"With all due respect, sir," Baum said, "they seem to be . . ."

"Subsentient," Phyll agreed.

". . . making communication impossible."

"Suggestion?"

"Find the one apparent sentient in the area, sir."

"I agree," Phyll told him.

"Very well, Ambassador, proceed!"

"Proceed," Baum mimicked in a telepathic sarcasm.

"Baum!" Plast flashed right back. *"Some respect . . ."*

"Where do your instruments say the sentient is, Phyll?" Baum asked aloud, cutting Plast short.

"A hundred and ten branches due magnetic west."

"Mine agree. Proceeding in that direction now."

There was a period of radio silence as Baum crashed and slid through the underbrush (too low of a sentience level to be aware of pain or damage in any way but a purely mechanical sense). Before long, he broke out onto a road running very nearly parallel to his line of travel and followed it. It led him to a green pickup truck with the label *U.S. Forestry Service.*

"I've found what conceivably could be a mobility unit for one of these giants, sir. But with as shallow a perch as it provides, I don't see how it could be practical."

"Baum!" Phyll interrupted. "Behind you: The sentient is immediately behind you."

Baum spun around almost fast enough to upset his unit.

"Describe what you see!" the captain ordered.

"I see a relatively ancient giant, similar to all the others here. Gymnospermal, rooted. A grownup, perhaps?"

"Perhaps. What else, Baum?"

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"Several hundred seemingly low priority bushes and moss, and a small, gray, furry creature . . . animal. About one-hundredth of my height."

"Go on."

"A blue-feathered animal capable of sustained flight and high audio-frequency generation."

"Anything else?"

"A biped. At least three-quarters of my height."

"Can you tell which is sentient?"

"I'm getting a reading of twenty-one. Only slightly below ours."

"Which one, Baum? Which one?"

"Impossible to tell, sir."

"In that case, begin selective elimination until we find it."

Phyll looked at Plast but said nothing. The captain was in charge and proceeding along accepted lines taught him by the Tradition.

"Yes, sir," Baum answered. "I will leave the apparent sentient, the tree, until last and destroy the other unlikely beings first." And with that, he disintegrated all the shrubbery in the area.

"No change, Baum. That wasn't it."

"But only the tree and the animals remain, sir."

"Proceed, Baum."

"Yes, sir." And he disintegrated the blue-feathered creature.

"No change."

Then the small, gray, furry one, which was trying to scamper away.

"No change."

Then the larger biped as it was frantically clawing at the door of its pickup.

The sentience dials sank to their usual "three" reading.

"Bingo!" Phyll screamed (well, actually he screamed something like "Thunder weather!"). "That was the one. Which being was it?"

"You'll never guess," Baum sighed.

"Which?"

"The biped."

"An animal?" the captain asked incredulously.

"An Eater?" Plast echoed.

"Affirmative," Baum told them, stunned. "Bring me up."

Phyll punched the button to beam him aboard and turned to look at the captain in bewildered silence.

"Suggestions?" the captain asked them as they all clustered in the bridge.

"We need more confirmation, sir," Baum said. "How can we be sure some mistake wasn't made in this last encounter?"

"No mistake, Baum," Phyll told him. "When we first found the solitary tree-person insentient, I suspected something amiss and had the computer send selective monitors into areas highly populated by sentients. In every case, the area has been swarming with those bipeds."

"Why didn't you tell me?" Baum asked.

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"I didn't know myself until a few moments after we brought you back up. The computer just finished."

"Then it appears to be as bad as what we were afraid of," the captain concluded. "The bipeds *are* the sentients."

"How could that have happened, Phyll?" Plast joined in.

"I really don't know, Plast. Maybe some freak evolutionary changeover. Perhaps some factor retarded plant development and allowed the animals to take over."

"Do you suppose at one time the trees were the highest life forms and the animals only the keepers?" Baum speculated. "Maybe the trees reached some state of perfection and withdrew from outside awareness only to stagnate with the passing eons."

"Oh come now, Baum," Phyll criticized telepathically. *"Idle speculation?"*

"Enough of what happened," the captain cut in. "The problem we face is what we should do about it. Suggestion, Plast?"

"Well, um . . . I would be in favor of recording what we have seen and leaving it as it is."

"And you, Phyll?"

"I would stay and observe them awhile, and then would try to communicate with them. They *are* intelligent, you know."

"Intelligence does not necessarily imply worth," the captain told him. "What would you suggest, Baum?"

"Were it not for their seemingly major role in the carbon-dioxide/oxygen cycle, I would destroy them altogether, sir. Instead, I would merely remove their sentience."

"Can you do that?"

"Yes, sir. It has been done before on Tubory VII where a marine animal life form was found to be dominant. To restore order, the exploratory crew developed a neurotoxin capable of destroying a sentient's level of awareness and leaving only instinctive levels necessary for survival. We could duplicate their move, sir."

"If they were capable of developing sentience once, they might do it again," the captain reproved.

"Not if we intervened in the meantime and introduced favorable evolutionary factors by way of mutation into the local tree-folk."

"Sir," Phyll complained, "surely you wouldn't simply *destroy* . . ."

"Wouldn't, Botanist? If necessary, I *shall.*"

"He is the captain," Baum reminded him telepathically, *"and his decision would be final."*

"Go to hell," Phyll beamed back.

"Some respect, please," Baum teased. *"Why, if the captain even suspected . . ."*

"The import of the matter," the captain lectured, completely unmindful of other conversation, "is obviously very great. I shall go to my quarters to consider it. When I return here before you in two or-

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bits, I will have made my decision. At that time, our next move will become obvious."

So saying, he crept out the door, leaving the other three alone. They stayed apart from each other, normally friends by nature but now, for the time being, opponents.

Two orbits later, at precisely the moment the sun was setting on the Martian horizon below, the captain whirred back to the bridge.

"I have reached a decision," he announced.

"And?" Baum queried impatiently.

"Permit me to give you the reasons for my decision first. Fair?"

"Indeed, sir," Baum replied.

"This matter, as you informed us, Baum, is not without precedent. In the Fifth Appendix of *The Book,* the captain of *Cloak II* found himself with a decision quite similar to our own to make, concerning a dominant marine life on Tubory IV—not VII, Baum—which was interfering with normal treefolk evolution. He based his decision upon the very fundamentals of *The Book* by considering the very first page—something I should have thought to have done.

"On that page, as you probably know, the Primary Postulate states, 'The Universe is material,' after which, of course, it defines 'Universe' and 'material.' The following argument says, 'The highest form of matter and/or energy is that which is said to be alive,' defining 'life' in a rather broad sense. 'Of life,' it says, 'the highest form is sentient. Of sentient life, the highest form is self-contained, capable of sustaining itself without the necessity of destroying other life.'

"This argument, gentlefriends, is built upon self-evident statements and cannot logically be refuted. Agreed?"

"Agreed," they confirmed, knowing that it *was* logical, and that it was the basis for all further theories.

"By way of conclusion, then, this implies that we, capable of photosynthetic nourishment, are superior to those animals, dependent upon other life for their sustenance. Am I right, thus far?"

"Completely," Baum replied quickly, sensing Phyll's reluctance.

"Now," the captain continued, "further on in *The Book* it says, 'When two or more forms meet which are mutually exclusive, that is to say, forms which cannot coexist, it is both desirable and imperative that the superior form remain and that all inferior forms relinquish their hold.' Surely by now you can begin to see the implications."

"But, sir," Phyll refuted, "the argument posits a condition of mutual exclusiveness. Why can't we simply coexist?"

"Coexist, Botanist? With a race of Eaters who have always lived in competition with one another? And

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worse, coexist with the *dominant* of those? Surely you can't be serious. To allow them to exist would be to allow them to compete with us, possibly even to destroy us through their well-rehearsed aggressive nature. We are the superior form, and it is intuitively logical that we triumph. If we act now, we can destroy them before they spread, before they establish too strong a foothold."

"But, sir—"

"They are a weed, Botanist, and must be removed."

"I agree we are the superior form, sir, but I don't think it's necessary to destroy them, even if they are a weed—a point to which I might even concede. They are sentient, we already have proof of that, and as sentients they are undoubtedly capable of feeling pain."

"Nonsense. Eaters are gobbling each other up every minute of the day. Pain has to be a way of life."

"As well it might be, sir. But we can't know that for sure. And neither can we know what kind of civilization such a life form is capable of generating."

"Eaters don't form civilizations," Baum said. "They roam in packs."

"But these Eaters *do* live in communities."

"They do?" the captain asked, mildly surprised.

"Indeed. Settled communities. Only the subsentient Eaters roam in packs."

"Interesting."

"Is that to be taken as the roots for a theory that sentience, rather than the structure of the life form, is responsible for civilization?" Baum challenged.

"Possibly," Phyll retorted. "We can't know one way or the other unless we study the bipeds over a period of time."

"Botanist, if we took time to investigate every life form showing signs of sentience, we would still be—"

"But this form is a special case, sir. They are very nearly as sentient as we are. Why? I don't know. They are a secondary life form, but what are they doing in the primary position? Again, I don't know."

"Those questions are interesting, but I'm still not convinced."

"Those questions are extremely important, sir. Their dominance raises the possibility that we might not be the truly superior form."

"That's a little too close to sacrilege, Botanist. In the future, you'll watch your comments."

"Yes, sir."

"Helmsman?"

"Yes, sir?"

"What are your feelings on the subject."

"I would be in favor of further study, sir."

"You would?"

"Yes, sir."

"Ambassador?"

"Sir?"

"What is your opinion?"

"I think you know it, sir. The

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sooner we destroy them, the less likely they are to spread."

"Hm-m-m. My feelings are now too mixed to say one way or the other. The answer is not as obvious as I would have thought."

"They might be a highly civilized form, sir," Phyll told him. "With a logic. Maybe even a science. I think we owe it to ourselves to find out."

"A logic, Botanist?"

"Yes, sir."

"I think you have just answered the problem with that point."

"I have, sir?"

"Yes. If the bipeds are of the sentience level where they possess an adequate logic, certainly they are worthy of being spared. Do you agree?"

"Oh, I agree wholeheartedly, sir." Phyll grinned.

"Fine, now if their logic is sound, any decision they make ought to be decent enough for us to follow."

Just drawing the possibility of saving the bipeds for study pleased Phyll, but he wasn't quite sure what the captain's intentions were.

"How do you mean that, sir?"

The captain seemed to ignore him. "Prepare a set of coordinates for a point where a biped community intersects a tree-folk community. Baum, prepare to be beamed down. Leave your mobility unit on board. We don't want any obvious outside equipment to interfere."

"Ah, yes, sir."

"What are you doing, sir?" Phyll asked, somewhat puzzled.

"I'm going to confront a biped with a decision to make similar to our own by sending Baum to an area near a biped community. If the creatures are as logical as you would like to think they are, the decision they reach regarding what to do about an 'alien' sentient will be the one we will make regarding them."

Phyll's branches drooped just a bit. "Isn't that a bit risky, sir? Using one biped to judge the whole life form?"

"Individual decisions are what I want most, Botanist. If this race is to be preserved within our system, I must be sure any individual is capable of reaching a logical decision, and more importantly, I must know the nature of their logic. Do you have the coordinates?"

"Yes, sir. A mountainous region with a small degree of biped activity."

"Then launch. Ambassador, grant the bipeds full sentience and greet them accordingly."

"Yes, sir."

"First time I ever beamed down naked to save a race of weeds," Baum was grumbling as Phyll punched the button.

Apparently the Eater weed with the buzzing chain saw was either deaf to Baum's telepathic greetings or not very selective about what he chose to cut down. ■

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the reference library

P. Schuyler Miller

FRANKENSTEIN'S CHILDREN

It is difficult to realize that J. O. Bailey's "Pilgrims Through Space and Time" was published twenty-six years ago. It was the first scholarly study to recognize science fiction as a distinct genre, and to cover pretty well its entire spectrum rather than one subdivision (utopias and dystopias; imaginary voyages; future warfare). It was ultra-scholarly, in the sense that it dealt almost exclusively with respectable hardbound books which might be encountered in rare book collections of university libraries, and barely mentioned the magazines which had been flourishing for more than twenty years. (It has also supplied the name for the Science Fiction Research Association's "Pilgrim" awards to scholars of the field.)

There have been a good many books since 1947 that strove to bring Bailey's survey down to date. Parts of Sprague de Camp's "Science Fiction Handbook" in 1953; Kingsley Amis' "New Maps of Hell" in 1960; Sam Moskowitz' various surveys of magazine SF; Sam Lundwall's "Science Fiction: What It's All About" as recently as 1971; and many more specialized or more personalized books (such as Donald Wollheim's "The Universe Makers"). The American books were pretty provincial in limiting their discussion to English and American writers and publications; the English surveyors showed more knowledge of what was being written in other languages; and there are reports of a number of outstanding surveys by European scholars which (unlike Lundwall's Swedish book) have not been translated into English. Now Brian W. Aldiss—author, editor, anthologist—has started a new wave of histories of science fiction with "Billion Year Spree: The True History of Science Fiction" (Doubleday & Co., Garden City, N.Y.; 329 pp.; $7.95).

Aldiss' book is by far the best of its kind that I have seen. He knows science fiction in all its aspects. He understands it, as some scholars-come-lately do not. He enjoys it. And he sees it in its setting, as part of English-language literature and as part of world literature. He is neither an idolator nor an iconoclast. On the other hand, he has based his survey on a definition of science fiction that excludes whole areas (utopias, satires) which others feel are a legitimate and important part of modern science fiction:

"Science fiction is the search for

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a definition of man and his status in the universe which will stand in our advanced but confused state of knowledge (science), and is characteristically cast in the Gothic or post-Gothic mode."

I, for one, prefer a definition by Miriam Allen de Ford, which Aldiss quotes from a book (collection? anthology?) I had never heard of ("Elsewhere, Elsewhen, Elsehow"):

"Science fiction deals with improbable possibilities, fantasy with plausible impossibilities."

For Aldiss, the first science-fiction novel is "Frankenstein." He goes back for a look at its predecessors—both the books like Cyrano de Bergerac's, Lucian's, Kepler's, "Gulliver's Travels," that others have classed as science fiction, and to illustrate the evolution of the Gothic (*not* U.S. newsstand "Gothic") novel in England in the century before Mary Shelley's book appeared—but his limiting definition rules them out. It seems to me that here he is bogged down by his own primary criterion, because some of the Eighteenth and Seventeenth Century, and older, books he rules out do represent the "advanced but confused state of knowledge"—at least, the beliefs—of the natural philosophers of their time. Aldiss understands all this, and says so: his book "errs on the side of exclusiveness. It's more hard-core than soft."

I could have, and perhaps I should have, filled up my space here with quotations from the book—things that will stop you with an "Aha!" or an "Oh no!" Example:

"When it is time to think about a subject, a lot of people will be thinking about it." (That nicely explains the spate of stories on the same theme that editors and readers complain of, and the accusations of plagiarism that rise from time to time.)

"Wells is teaching us to think. Burroughs and his lesser imitators are teaching us not to think." (Any critic who enjoys Edgar Rice Burroughs can't be a stuffed shirt.)

"The worst Gernsbackian science fiction neither thinks nor dreams." (Ouch!)

"Science fiction . . . has only attracted writers of talent," not writers of genius.

"If sf (his abbreviation) as prophecy is out, sf as prodromic utterance (premonition) is definitely in. We have seen how Mary Shelley has a prodromic gift. My belief is that sf as a whole has something of the same ability."

I think this is a book you should read and will enjoy reading. You may disagree with whole chunks of it—both Aldiss' ideas of what science fiction is all about, and his evaluation of specific books and authors. But I'll leave you with this, from his chapter on the '30's:

"Like C. S. Lewis, I have never accepted that enjoyment of Shakespeare's plays precludes pleasure in the comics, or that those who visit Barsoom should not feel at home in Hardy's Wessex. There are more things for more occasions than Lit. Crit. will ever allow."

I have a feeling that Lit. Crit. may have to consider Brian Aldiss for a future Pilgrim Award.

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THE BEST SCIENCE FICTION OF THE YEAR NO. 2

edited by Terry Carr • Ballantine Books, New York • No. 03312 • 370 pp. • $1.25

This is the best of the "best" anthologies I have read so far this year. If 1973 is like 1972, there are at least two more to come. Only three magazines—Analog with one story (Joe Haldeman's "Hero"), *Amazing Stories* with one, and *Fantasy and Science Fiction* with three—made the winners' circle. The other eleven stories are from assorted anthologies of original SF. Surprisingly, Harlan Ellison's blockbusting "Again, Dangerous Visions" has only one winner, though there are more in a list of fifteen runners-up.

The theme of most of the stories—and perhaps Terry Carr is saying that this is the theme of most present-day science fiction—might be called "Our world and welcome to it!" The stories project all too visible forces and trends in our own society into the near future.

The best story in the book, Gene Wolfe's "The Fifth Head of Cerberus," is one of the exceptions. It has already made itself a classic, and most critics seem to feel that—like "Baby Is Three" in Sturgeon's "More Than Human"—this part is better than the whole book, which it ties together. You will find something new in the story every time you reread it—a subtly horrible picture of a strange family in a strange slave society.

Haldeman's "Hero," which I've described here before (and you probably read when it was first published here) is another outer-space story—a crueler, more cynical extension of Heinlein's "Starship Trooper." James Tiptree, Jr., in "Painwise," gives us another facet of the bureaucracy of space. His scout has been adjusted so that he can no longer feel pain, and sent out with a repair crew to probe into places too dangerous for ordinary human beings. The rationale: "It is part of my program, therefore it is rational." Perhaps Ben Bova's "Zero Gee," a study of weightless fornication, belongs in this company.

The other stories, in one way or another, are about ourselves. You can think of them as distorting mirrors reflecting the present, or as plane mirrors showing what may be. In a last and memorable collaboration of Frederik Pohl and the late C. M. Kornbluth, "The Meeting," we attend a kind of PTA meeting in a school for retarded children. These parents have recourse to something we don't have—they can have a strange child's brain put in their child's healthy body. In Joanna Russ' "Nobody Home" we see the pain of being an ordinary person in a society of brainy butterflies. In Grahame Leman's "Conversational Mode," a computer makes clear that in a world of seven billion people an individualist is by definition psychotic. Happily, in "Eurema's Dam," R. A. Lafferty introduces us to an individualist who is by no means a loser—the last dumb kind ever born. "Only the inept and the deficient will invent,"

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says Albert's machine's machine.

There isn't a bad story in the collection, but I have two more particular favorites. Poul Anderson's "Fortune Hunter" shows us a time when the last wild areas are really sealed off to protect them from us, except for a few rangers and scientists. His "hero" tries to seduce himself a place in the Wind River country. And William Rotsler, in "Patron of the Arts," argues that art must communicate.

It's a sad society that these writers project into our not-very-distant future. In Robert Silverberg's "When We Went to See the End of the World" the time travel is faked—but the people could care less. In Edward Bryant's story of the future city of Cinnabar—his counterpart of Ballard's Crimson Sands—"Their Thousandth Season," the future jet set are simply going through ritual motions. In Silverberg's "Caliban" the society is so homogenized that everyone looks, as well as thinks, alike.

There are three stories left that don't quite fit any of these categories. Naomi Mitchison's "Miss Omega Raven" may remind you of Stapledon's "Sirius," though it is a brainy raven that has no place in her society or ours. Alexei and Cory Panshin, in "Sky Blue," show us a painfully normal child of way-out parents who see no reason to be hampered by conventional ethics—even when dealing with superbeings like The Landlord. Gordon Eklund's "Grasshopper Time" introduces us to two genius children and—something.

It would be no real surprise if all the "Hugo" awards for short fiction went to stories in this anthology.

BEST SCIENCE FICTION FOR 1973

edited by Forrest J. Ackerman • Ace Books, New York • No. 91360 • 268 pp. • $1.25

Oh, there's good news today! Instead of adding a sixth annual "best SF" anthology to the current swarm, as I had thought he was going to do, veteran fan Forrest Ackerman has taken over the Ace series started by Donald Wollheim, who now has his own under his DAW Books imprint. What's more, he has pledged that his selections will be real *science* fiction—and starts out by keeping his promise. Well, almost: one of the nine selections, "The Shape of Science Fiction to Come," is Frederik Pohl's guest-of-honor address at the 1972 World Science Fiction Convention in Los Angeles.

Forry—as Forrest Ackerman is well and widely known—may have dealt himself something of a handicap. He won't buy any story that some other "best" anthologist has already selected. On the other hand, he is apparently an early starter. As a kind of bonus, he lists four stories he would have included if he had had room or hadn't been beaten to the punch. He is offering a bonus to the three authors whose stories the readers like best, so I'll have to be careful not to stack the deck unduly.

Four of the nine stories are from magazines. Analog has Norman Spinrad's "A Thing of Beauty," that slight but bright reminder of

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the good old days of *Unknown,* with its switch on the switch on the man who sells a foreigner the Brooklyn Bridge. *If* has my own favorite, Frederik Pohl's "The Merchants of Venus," one of the first stories about the "new" intolerably hot Venus. It is getting—and going to get—plenty of reprint mileage. *Galaxy* has two entries: Philip José Farmer's "Seventy Years of Decpop" and Milton A. Rothman's "Getting Together." The Farmer story is a good one, unusually "straight" SF for him, which follows the consequences of zero population growth in rehsaping the economy and the society. I think it would be one of my three, if I were voting. Rothman, a physicist and old-time fan, whose first story was published here in Astounding in 1939, tells the moving story of a robot learning to be human. I don't really think Forry picked the story for its last-line pun—it's too good for that.

Infinity Four, one of the best of the original SF anthologies, hits twice, with Robert Silverberg's "What We Learned from This Morning's Newspaper" and Thomas Scortia's "By the Time I Get to Phoenix." The Silverberg story combines the classic tomorrow's newspaper story with something like Arthur Clarke's "Nine Billion Names of God," in a way that almost disqualifies it. Scortia's story, if it were unsigned, is one most readers would attribute to Farmer—sex and horror mixed in the story of a loner who finds a strange woman in the desert.

Robert Bloch doesn't write much straight science fiction, but "Forever and Amen" proves that he can when he wants to. This is the story of the Skinners—the Skinner clone, to be precise—and the world they make for themselves. Finally, A. E. van Vogt shows that he is getting his old vigor back with "Ersatz Eternal," a very short story about a very strange world.

Forry has held his enthusiasm for corny puns down to the barest minimum and put together a very good "best." Read it and vote.

TO DIE IN ITALBAR

by Roger Zelazny • Doubleday & Co., Garden City, N.Y. • 1973 • 183 pp. • $4.95

Roger Zelazny's last few books have been out-and-out fantasies, so you haven't heard about them here. In fact, I have put them away on the fantasy shelf to read if and when I have some time to myself, along with the sword-and-sorcery epics, the John Carter imitations, and other such. This one, though, is close enough to the border of the possible to be considered science fiction. It isn't the best Zelazny, but it has his color and wild surmise and all the other qualities that make it impossible for him to be dull.

The book has the fan or scallop-shell pattern, with several plot lines and characters all drawing together toward one focus in the town of Italbar. It also draws on the theme used in some of Zelazny's other books (and others, of course), of tremendously strange, tremendously powerful beings, evolved early in the history of the universe and sur-

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viving as gods or demons or what have you.

The man known as "H"—Heidel von Hymack—has encountered one of these creatures in the ruins of the abandoned shrine of a fading race. She appears to him as the Blue Lady, Arym-O-myra, goddess of disease and healing, and she makes him into a strange hybrid healer and plague carrier. At certain times, under certain conditions, the mere sight of him will cure; at others, it will kill horribly. His blood may contain antibodies for scores of plagues, or it may be deadly.

"H," needless to say, is hunted by a variety of people and things who want to use or destroy him, not the least of them Arym-o-myra herself. There is Dr. Larmon Pels, the "dead doctor," a pathologist-in-orbit rather like Poe's M. Valdemar, who wants H's secret for the good of galactic medicine. There is Commander Malacar Miles, avenger of thirty-four badly beaten worlds against the fourteen great leagues, and last man to live on a shattered Earth. There is Francis Sandow, who makes worlds—and could make a new Earth. There is Miles' nonhuman telepathic ally, Shind the Darvenian, and his very human associates, the whore Jackara and the dream freezer, John Morwin.

There are, needless to say, the Galactic Police.

It really all comes together in the end, near Italbar if not in it. En route, Zelazny has shown you some very strange things, and made you believe them.

THE FELLOWSHIP OF THE HAND

by Edward D. Hoch • Walker and Co., New York • 1973 • 198 pp. • $5.95

Edward D. Hoch writes excellent detective/mystery stories—his short stories are especially good—and he also tries his hand occasionally at science fiction. Last year Walker published his first book about Carl Crader and Earl Jazine of the Computer Investigation Bureau, "computer cops" in a future America which has joined forces with Canada. It was one of the best hybrids of detective and science fiction that we've had. You can buy it now as a Pocket Books paperback (No. 77640; 95 cents), and that is exactly what you should do if you haven't read it.

You should certainly read it before you tackle the new adventure of the two computer cops, because it again involves HAND (Humans Against Neuter Domination) and its activist leaders. This time the anticomputer radicals blunder into a CIB investigation of the attempt by a group of tycoons to take over the country by rigging the computers that handle a Presidential election. Unfortunately, all the lovingly developed detail that made the first book real and fascinating is sloughed off or taken for granted in this one. It's a short story technique applied to a book-length mystery; it doesn't work very well.

"The Transvection Machine," we are told by Pocket Books, is being filmed. Let's hope that works better. As well as "Colossus: The Forbin Project," for example.

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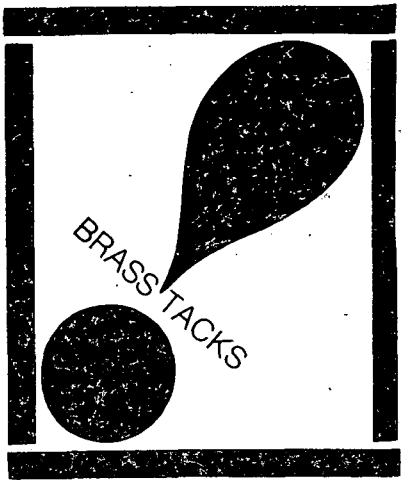

Dear Mr. Bova:

As a long-time reader of Analog, I cannot resist the temptation of remarking on the extraordinary parallels between the annihilation of the Highlanders in the last part of Pournelle's "Sword and Scepter" (June issue) and a similar incident in Korea between Ethiopian and Chinese forces. The latter was described by S.L.A. Marshall in a story called "The Incredible Patrol," in his book "Pork Chop Hill." It seems to me that there are too many similarities for mere coincidence.

G. VANDERHOEVEN
5542 Ascot Court, Apt. 222
Alexandria, Virginia 22311

Pournelle has acknowledged quite openly his admiration for "Slam" Marshall's description of that battle. Jerry is one of the many SF writers who use historical incidents as the backbone of stories about the future.

Dear Ben:

A point of information in the name of fairness . . . all stories which lack a credit notice in "Strange Bedfellows" are *originals.* The book is *not* all reprints, as P. Schuyler Miller suggests. My story and Jack Dann's were done especially for the Random House volume.

GEORGE ZEBROWSKI

Anthologies are generally either all-reprint or all-original. It's unusual for an anthology to contain a mixture.

The August editorial, "Giant Step Backward," evoked an expected flurry of responses. A sampling of them follows. Unfortunately, most of the replies took issue with the concept of evolution, and showed that the writers are either unaware of modern biochemistry, biology, genetics, and anthropology—or don't believe what they read. As stated in the editorial, while many of the details of evolutionary development are still being argued, no serious scientist doubts that Darwinian evolution is basically correct: humankind did indeed evolve from earlier forms of animals. And while a belief in science is no reason (or excuse!) for lack of religious faith, neither is religious faith a reason or excuse for ignoring the demonstrable truths of science.

Of course, science is an approximation to reality; and it is only by striving for exactness that a close approximation to reality can be made. The assumptions of religion are made subjectively, based not on objective evidence, but on that sub-

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jective emotion called faith. Faith is a fine guide in many things, but it does not, cannot, and was never intended to replace thinking.

Dear Mr. Bova:

I chanced upon the August issue of Analog and read your editorial called "Giant Step Backward." I found your method of argument almost amusing in a sardonic sort of way. Your conclusions regarding biological evolution were just as farfetched as the day Charles Darwin first expounded them over a hundred years ago . . .

You stated there is an "overwhelming weight of evidence in favor of evolution." I would like to know where this evidence is located. Is it possible that while my back was turned someone has dug up the long-sought-after "missing link"? Or does the evidence still consist of a skull fragment here, and a sliver of jawbone there? Perhaps a femur, a tibia, or a scapula located in a remote corner of the globe? This seems to be the sum total of evidence that anthropological science offers us in support of evolution. Such is hardly valid testimony to the origin of man. In fact, if presented in a legal way, in a court of law, such "evidence" would be laughed out of court. (The Scopes trial must be excluded as it dealt not with the truth or falsity of evolution, but with the legality of teaching it under state law.)

I am familiar with the arguments propounded by evolutionists for generations. I have read their books and weighed their pronouncements. I am convinced they are in error. True, they have pursued knowledge for years. Granted, they have acquired impressive degrees from the halls of learning. Nevertheless, they labor in the twilight zones of obscurity where the only rules are those laid down by Lamarck, Darwin, Huxley, Lyle, and a handful of enshrined "gods of science" who followed them . . .

The primary consideration before us is: could life have evolved out of "inert chemicals" as you contend? This, of course, is the theory of "spontaneous generation" which pre-dates Darwin by centuries. But tens of thousands of thinking men have rejected this concept because it is contrary to reason. How can life spring from nonlife? It is just as logical to believe that the inert component parts of an automobile could assemble themselves into a functional vehicle.

The universal law of The Fixity of The Species has never been disproven by the evolutionists and never can be. Mutations and hybridity do nothing to alter this law in any way. Darwin's theory of natural selection is just as unprovable today as when he first published it. We find that the Cro-Magnon man is just as human as today's homo sapien. The same is true of the Neanderthal man, while the unfortunate Piltdown man turned out to be a nonexistent creature. The truth is, the fields of anthropology, biology, and even geology, are rife with distortions, misrepresentations, and outright fraud; much of which is directed toward the presentation of the evolutionary concept . . .

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I am most pleased the California Board of Education adopted the Genesis account to its school curriculum. It may prove a refreshing wind of change after nearly one hundred years of Darwinian deception. If it's ever adopted nationwide (which you apparently dread), it could prove to be a first step toward returning to a sensible, sane approach to education in our generation.

JAY DISBROW
127 Valley Road
Neptune, New Jersey 07753

Dear Mr. Bova:

Congratulations! Your blind faith in the unproven theory of evolution is a wonderful thing to behold. Your Roman Catholic background explains your unfamiliarity with the story of the Red Sea crossing. Not only did the Jews (Tribe of Judah) cross dry-shod. There were twelve more tribes of Israel as well. If you researched *both* sides of the Genesis versus Evolution question, your competence to editorialize would be less subject to question.

HENRY EASON, JR.
P.O. Box 3013
Jackson, Mississippi 39207

Dear Mr. Bova:

Naturally I read your editorial in the August issue with intense interest. Don't you think, though, that in a no doubt praiseworthy effort to improve the argument, you kind of loaded the dice?

The crack about including the phlogiston theory of combustion, the caloric theory of heat and the Ptolemaic description of the Solar System in California science courses was just a little bit snide. These theories can be proved, scientifically, to be fallacious. This is not true of the theory of evolution or the theory of divine creation. There is no way that either or both of these theories can, as yet, be scientifically proved to be false. Either may be correct. This being so it is quite improper to allow young people to believe that the truth about the origin of life has been positively and factually established. Hence the need for the presentation of both explanations . . .

A little further on you state, "The events described in Genesis did not actually take place." If you actually believe this you are in a difficult position. If you rule out supernatural creation are you going to say something like, "Well, fellows, there was all this space full of hydrogen and it condensed under the pull of gravity . . . ?" At this point some rude fellow will interrupt you and shout, "Just one cotton-picking minute. Where did all that hydrogen come *from*?" There is no real future in constructing materialistic theories of ultimate beginnings. No place to start.

I am also very dubious of this "overwhelming weight of evidence in favor of evolution" bit. Most of these fossils you name have been discovered in my lifetime. Stupidity may be hindering my understanding of these great discoveries(?) but for the life of me I cannot see that they *prove* one damn thing.

The most that can be said for them is that certain parts of the bony structure of these fossils bear

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a resemblance to certain parts of the bony structure of man. There is no way in logic by which you can progress to the proposition, "Therefore this proves that these creatures were the prehuman ancestors of man." They are far more likely to be a superior form of prehistoric ape . . .

In the meantime why not check the data? I am sure that any reputable scientist in the field will tell you that the theory of evolution is still a theory, unproved and unprovable in the present state of science.

NORWIN JOHNSON
Box 311
La Canada, California 91011

Dear Mr. Bova:

To a great extent I agree with what you say in your August 1973 editorial, "Giant Step Backward." Religious teachings of *any* kind have no place in public schools: they are a breach of promise in regard to the separation of Church and State. Furthermore, teaching of beliefs of the majority religion (in this case, Christianity) in schools where there are children of diverse faiths is confusing to those children of minority religions, as well as unfair to their parents; young children, especially, tend to accept what their teachers say as *the* truth. As a Christian married to a Muslim, and trying to raise our children according to the best ideas of both faiths, I have faced the frustration of trying to undo the proselytizing that goes on, especially at Christmas and Easter, in our non-church-affiliated public school . . .

Which brings me to the second point of disagreement. Your attitude seems to preclude the existence of God because man is a free agent. Could not science, conceivably, even if in some future millennium, discover there *is* a God? Could it not be possible that He intended man to be a free agent? That He exists, even if He is impersonal and does not take an individual interest in individual people? Perhaps there was a God at one time, who took a personal interest in His "children," but He is now dead, as some thinkers today claim. Perhaps science will someday discover God is or was a superbeing from some other place, somewhere—another planet, another galaxy? The traditional belief of God's residence, Heaven, being somewhere "up there" could be cited as possibly being based in fact.

In any event, should science clear up the mystery, believers and nonbelievers alike will have to revise their thinking. Then they can all start arguing over where *He* came from and how *He* came into being, and forming a whole new batch of religions, trying to explain the unexplainable.

CAROL L. AHMED
212 Wagner Drive
Northlake, Illinois 60164

Dear Mr. Bova:

Your editorial in the August Analog has left me somewhat aghast and very disappointed in your apparent lack of scientific objectivity. I have always considered objectivity and honesty as hallmarks of members of the scientific commu-

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nity, but when you begin a discussion involving biblical Christianity it is astounding how closed-minded some purported "intellectuals" can be.

Your editorial leads one to think that the people involved in the "Genesis" side of the question are mental midgets and fanatics and their viewpoint is not worth consideration. The fact is that there are many members of the scientific community involved who have credentials at least as valid as yours, and who would resent being placed in the "quack" category simply because they don't happen to hold your beliefs.

The point of contention is that creation by God is just as credible as evolution and that the teaching of evolution as fact in our educational system is a deception.

The theory of evolution is just that: a hypothetical theory with many serious gaps in it which prevent it from being a fact . . .

How can any supposedly scientifically objective person claim evolution to be a fact with problems like this plaguing it?

Now the Christian viewpoint: It would seem difficult to dismiss the possibility of God since science and logic are based on the premise that you cannot validate a point utilizing a negative. Because the biblical concept of God is all-powerful you cannot rule out the Genesis record as being factual . . .

Saying people who believe in God and Jesus Christ are wrong just because you personally haven't had the experience is not being very objective. You are overlooking a large amount of data in the form of personal testimony and changed lives—of which psychologists cannot explain a large amount by any other means than acceptance for what it claims to be: a spiritual rebirth . . .

I think science and engineering are wonderful things, but I also know (at least this one thing from six years of college) that science is purely an approximation to reality in every respect; some seems awfully close, but none is exact. So where did the exactness come from?

DAVID A. ODOM
14051 1st Avenue N.W.
Seattle, Washington 98177

Dear Mr. Bova:

I have finished reading your editorial in the August issue. First of all, I agree that the story of Genesis does not belong in a biology text or any other science text. Your handling of this point is well taken. However, you seem to me to get sidetracked from the main issue and to want to show that ". . . the events described in Genesis did not actually take place." You also vent your anxieties and frustrations concerning the shortcomings of some religions and sects. Remember that you don't convince people by insulting them, by saying, "Pthth . . . on you and your ignoramus ideas." That kind of thinking that goes "I know . . ." or "It is a fact . . ." helped to cause the mess we're in when people discuss the theory of evolution. That kind of thinking is the same kind of bigotry village idiots and religious fanatics use. It

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doesn't sound any better when used by scientists . . .

If it seems that God made an error in placing man in dominion over the earth, perhaps it wasn't God that erred but man who took his meaning wrong.

DARRYL W. BOYER
1027 North First Avenue
Tucson, Arizona 85719

Dear Mr. Bova:

Regarding your August editorial on evolution, I disagree. I have a Ph.D. and M.S. from Minnesota and a B.S. from Berkeley, all in the general area of forestry-genetics-physiology-cytology, and I believe the Genesis account of Creation. In fact, I find it much easier to believe than the evolution theory.

Before you throw this into your "nut" file, let me hasten to say that I entered college a confirmed evolutionist. It was while studying biology, botany, and genetics that the gaps in the evolution theory began to appear, which were ignored in elementary courses. Berkeley Genetics Department is the center of evolution, and it was here, as a graduate student in genetics, that my professor disclosed some of the holes "big enough to drive a truck through." This is not for general consumption, but only for the "safe" students.

However, I did not remain a safe student, but lost much of the attachment for evolution that had been drilled into me as fact. When it became evident that I could not earn my doctorate at Berkeley, I moved to Minnesota. I moved because of the hostile environment and bigotry among the faculty, not because of grades. When my major professor learned of my feeling for the Creation, he tried to make me out as a nut, but was shaken when he found out he had given me an A in his course.

I am not a member of the Creation Society or any other confederacy of scientists. However, they are all scientists and hold to one explanation of Creation, whereas in my mind it is difficult to prove any of several explanations.

Since our reproduction of aspen from callus tissue (test-tube tree), I have talked to fifteen or twenty groups of different backgrounds, and have always stressed conservation of world resources, to which my research and teaching have been directed. Man is to have dominion over the earth, not spoil it. Think about it. You made several straw men that you easily knocked over. The trouble is that most evolutionists argue with themselves and do not bother to find out what a Creationist believes, other than what he has been told by his biology teacher.

In my travels I am finding many reputable scientists who either accept the Creation view, or who cannot accept evolution. As a parting shot, I would like to point out the rise of the new morality with a similar decrease in respect of morality based on the Bible. I think it is more basic, and goes back to the rise of the evolution theory. The hairy unwashed are the ones who were told that evolution is a proven fact. If no Creation, then no hereafter, and no Hell . . . Right?

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But what if they are wrong?

LAWSON WINTON
901 South Christine
Appleton, Wisconsin 54911

Dear Mr. Bova:

While I agree with your editorial in the August issue, you made one "fundamentalist" error. You referred to the "man above nature" attitude as being Judeo-Christian. Then you mentioned that the Eastern religions strive for a harmony of man with nature.

I am not a religious man in my Hebrew faith, but I have taken the pains to acquaint myself with fundamental Jewish ideas. One of those ideas is a healthy and conservative attitude toward the land. I cannot quote you biblical verse, but I remember many references to being good to the land. Furthermore, the early Hebrews were nomadic tribes and appreciated the land's yield. I won't dwell on the idea that since Jews were not allowed to own land very often, they subsequently took care of it and sometimes left it in better shape than previously.

You claimed to be brought up as a Catholic and so might construe Judaism as being Western European in nature because of the kinship between your religion and mine. However, Judaism is an Eastern religion, along with those religions of Islam.

Your error is common among unacquainted Jews, as well as Christians. I am just trying to minimize the misinformation I occasionally see. No offense meant, no offense taken. Keep up the great work on my favorite magazine.

ALAN M. HOFFMAN
8305 21st Avenue
Brooklyn, New York 11214

Dear Ben:

Agreeing in principle with your August editorial on teaching crap in California, I must nonetheless take exception to your inclusion of Islam in the coverage of Genesis.

As a man of scientific inclination, I think you would enjoy a stroll through the teachings of Islam. In the field of man's genesis, Islam is not at variance with current evolutionary theory—although with some chagrin I must admit that among Muslims there are those who disagree . . .

At any rate, Islam adds to the consideration of long-term natural development the concept of equally long-term deliberate cultivation of that development, by One capable of using forces science is as yet unable to systematically describe. In Arabic, the term usually translated as "day" is *yaum* (pronounced like "yawn" with an "m"): the term relates to a period of time of indefinite length, and is described in the Koran variously as a day, a thousand years, fifty thousand years, et cetera. It is not inconceivable that the "day" of Genesis reflects a period sufficiently long that the events of cosmological formation—in accord with "natural laws" that have been woven into the matrix of reality by that One—could transpire.

The relationship of Islam to modern science in other areas—mathematics (algebra is the Arabic *Al-Jibr*), chemistry (the father of

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modern chemistry—Geber—also from the Arabic root *jabara,* difficult), sociology, psychoanalytic theory (for both, see Ghazali of the Eleventh Century A.D.), political science (first written constitution), and so on—is comparable. If you will inquire into the accomplishments of Muslim Spain, prior to Ferdinand and Isabella, I am sure you will find that what we so proudly hail as Western technology derived, in fact, from Islamic roots and accomplishments on all fronts: had the Muslims not invented the cipher, for example, mathematics would still be a matter for beads on wires (notwithstanding another, later, development). Had the philosophical, historical and other writings of the Greeks not been preserved in Arabic, the European Dark Ages would have erased them from memory. The list could go on for weeks.

Islam, in fact, enjoins its adherents to "travel in the earth" for the purpose of seeing, with clear knowledge and understanding, the handiwork of a compassionate Creator; we are to "seek knowledge from the cradle to the grave" and revere "a learned man" over "a thousand ignorant worshippers." Further, "The ink of the scholar," says Islam, "is more sacred than the blood of the martyr." The teachings themselves are clear—and history, until recently, offers abundant testimony to their application to scientific development.

Harun Al-Rashid developed the first hospitals; Omar Khayyam developed a solar calendar with intercalary days that compares favorably with the modern leap-year system; and time after time, Islamic scientists culminated their lifework by recognizing—as did Einstein—the inherent imprint on their subjects of One greater . . .

Religion, moreover, has never taught man to abdicate individual responsibility—in much the same way as Darwin predicated consequences of irresponsible inclinations, so also does Islam teach the individual that he is individually a part of that complex that will be annihilated if it does not realize, orient on and fulfill first principles.

Islam, unlike the bigotry you assail, does *not* say all the answers are known: it teaches that all the answers are *knowable,* and each individual is capable of a certain level of knowledge for which he is responsible. Further, Islam teaches that mankind is part and parcel the local agent of, successor to, and link with that Superbeing Who Is Running the Show. Consider the maxim that he governs best who governs least . . . does the designer of the vehicle set foot on the Moon?

The frightening thing about your editorial is that it raises the specter of narrow-minded bigotry (huh . . . sounds familiar). One would expect from a scientist a broader approach to the situation than the mechanical one of sweeping it under the ideological rug. Could you, perhaps, be developing the mentality of a priest in service of the pseudo-neo-god Science?

DAWUD 'ABDUR RAHMAN
133506 Box 787
Lucasville, Ohio 45648

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continued from page 11

explosive, cores—then the quasar puzzle begins to fall into place.

The Milky Way and other "normal" galaxies are constantly spewing material out from their cores. At least one small galaxy (M 82) and one very large one (M 87) are known to have exploded. Seyfert-type galaxies have very bright, turbulent cores. And the quasars just might be other, much more violent forms of explosion at the cores of very distant galaxies. In many cases, the galaxies are so distant that we cannot see them at all, only the incredible brilliance of their core explosions.

When John Campbell called the quasars "impossible," he concluded that perhaps they were actually the collapse of whole galaxies into black holes. That was a popular interpretation a couple of years ago, when black holes were the newest playthings for astrophysicists and cosmologists.

But the new interpretation (that word *again*!) pictures just the opposite event. Instead of a galaxy collapsing and dying, the quasars—if they are galactic core explosions—might represent the birth of new galaxies.

The quasars are very distant, and

in times to come

Robert A. Heinlein graces our January issue with a Guest Editorial, adapted from the James Forrestal Memorial Lecture that he gave at the Naval Academy last spring. Annapolis graduate Heinlein told the midshipmen his views on writing, science fiction, patriotism, and life. He shares those views with us next month.

January's lead story will be William E. Cochrane's "The Horus Errand," a hard-science treatment of a subject that's always been considered fantasy: reincarnation. What happens to society when reincarnation—the transference of a human personality from a dying body to a newly-born one—becomes demonstrably real? The cover illustration is by Hugo-winning Kelly Freas, and blends ultramodern police equipment with the neo-Egyptian style of Cochrane's future Los Angeles.

Duncan Lunan shows, in the fact article, that we have already been contacted by extraterrestrial intelligence. In "Space Probe from Epsilon Boötis?" he shows why British astronomers are now seeking an alien satellite in orbit around the Earth.

We'll also have the final installment of Stanley Schmidt's "Sins of the Fathers," a passel of short stories, and all the usual features.

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therefore very old. What we may be seeing, then, is the unbelievably violent birth of new galaxies, formed in explosions that can only be explained by the violent collision of matter and antimatter. No other energy source can possibly account for the titanic brilliance of the quasars. The other, milder versions of galactic core explosions—including the expansion of the Milky Way's core—may be the settling-down process after the original explosion, the "last hurrah" of a galaxy-producing explosion.

There are still many staggering questions to answer, even if this highly speculative interpretation proves to be correct. Why do galaxies begin as explosions? Where does the original matter and energy come from?

Perhaps what we are seeing is an origin of the cosmos that is neither Big Bang nor Steady State, but rather a collection of Smaller Bangs that form the galaxies. It might go on indefinitely, continuously. At any rate, this interpretation might explain why the universe exists in quantum lumps called galaxies, rather than as a smooth continuum of stars and gas.

And, of course, if this interpretation is correct, and the quasars are very distant objects, then 3C 273 really is expanding at ten times the speed of light.

How do you interpret that?

THE EDITOR

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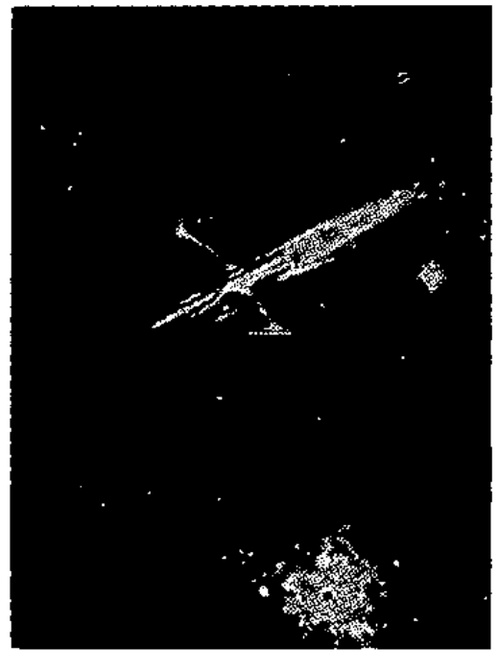

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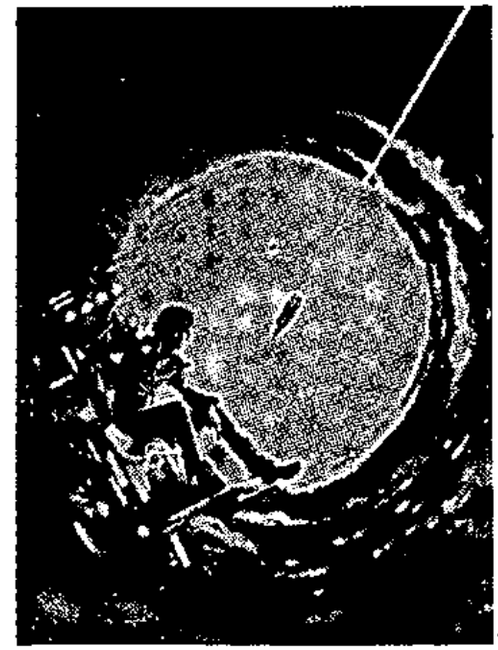

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...deep inside his endless
...s. Now I am a great soft
...hing.
...ave no mouth. And I must
...m.

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